The Builder.

Vol. XXXIV. No. 1754. Saturday, September 14, 1876.

ILLUSTRATIONS.

Plan of the Paris Universal Exhibition for 1878: The Champ-de-Mars Portion.—Architect, M. Hardy; Engineer-in-chief, M. Duval 902
The New Reredos, Chester Cathedral 904
The "Canterbury," Westminster Bridge-road.—The late Mr. Albert Bridgman, Architect 905

CONTENTS.

The Demand of India for Public Works and the Practical Answer 893
The New Cathedral at Chester 896
Tracoried Windows 897
The Works at Cologne Cathedral 898
Movement in India 898
Photographical Record of Historical Buildings 899
Sussex Archæological Society 899
The Greenwich New Public Offices 900
Noxious Trades in the Metropolis: New Sanitary Regulations 900
Extensions and Improvements in Northampton 900
Progress of the Great Tay Bridge 900
Asserted Bad Building in Hackney 901
The Portsmouth Dockyard Connecting Railway 901
Proposed French South Kensington Museum 901
The Paris International Exhibition of 1878 901
The "Canterbury" 907
Yorkshire Archæological Association: Halifax Parish Church 907
The Proposed New Assize Courts in Newcastle 909
The Tunnel Accident in the City 909
A Great Blast at Loch Fyne 910
The New Concert Hall and Additional Grounds at Buxton 910
The Employment of Young Girls in Brickyards: Difficulty in Enforcing the Law 910
Destruction of Scarborough Spa by Fire 910
Yarmouth Aquarium 911
"Art and Civilisation" 911
Architects and Clerks of Works 911
Exhibition of Sanitary, Domestic, and Educational Appliances 911
The North and South Woolwich Tunnel under the Thames: Proposed Carriage-way 911
The Fall of an Arch at Manchester 911
Wood-Carving Class, Sheffield School of Art 911
The Carriage of Explosives 911
The Staffordshire Institution for Nurses 912
Proposed Drainage of Dukinfield 912
The Public Buildings, Philadelphia 912
Boiler Explosions 912
Masters and Men 913
Church-Building News 912
Roman Catholic Church-Building News 913
"How I got on" 913
Common Lodging-houses in the Metropolis 914
Tenders for the Sewerage of Lincoln 914
The Sticking of Safety-Valves 914
The Toll on Chelsea Suspension Bridge 915
Books received: Parkes's Public Health (Churchill); Variorum 915
Miscellanea 915

The Demand of India for Public Works and the Practical Answer.

RE railways the best mode of communication for poor and undeveloped countries? No question has a more direct interest for England at the present time than this. It concerns the workman, the engineer, the capitalist directly; it concerns the consumer hardly less directly. The satisfactory solution of the question will involve the decision of a subject which must, before long, force itself into prominence,—viz., the economic value of the mineral traffic of railways in countries like our own. But the region where the real pinch is to be found is our Indian Empire. The want of communications in India, despite of what has been done in the way of railways, is a crying and monstrous evil. Wheat is at the present moment, if we may rely on the statement of Sir Arthur Cotton, selling at sixpence a bushel in Central India. This statement has been contradicted, but the *Friend of India* states that in May last wheat was selling at 6*s.* per quarter 180 miles from Calcutta. To bring that wheat to the coast costs three times as much as it would do to carry it from the ports to England. For that reason, we leave the cereals of our own territory to find neither market nor encouragement for their production, while we are paying some 20 millions per annum to America for grain to supply the place of that which we thus waste. We may well inquire whether this state of things is to be allowed to continue until we can afford to lay out 16,000*l.* a mile on railways long and numerous enough to make an outlet for this rich agricultural produce.

The compiler of the official statement of the moral and material progress of India during the years 1873-74 (the last published) has not taken the trouble to give any exact statement as to the railway works executed during that year, the whole subject of "communications" occupying less than a single page of the return. In the statement of the preceding year the lines open are returned at 5,872 miles of railway, having cost about 97,000,000*l.*, giving an average expenditure of 16,536*l.* a mile. On this outlay the gross receipts were 6,742,000*l.*, and the expenses, 3,557,000*l.*; giving a net income of 3,185,000*l.*, or a profit of 3·28 per cent. To make up the guaranteed rate of interest the Government had to advance the sum of 1,428,442*l.* in the year in question. The working expenditure amounted to 53 per cent. of the gross receipts, which compares favourably with the nearest subject of comparison at home. The Irish railways in 1874 earned a gross revenue of 1,186*l.* per mile, 57 per cent. of which was spent in working. The gross returns of the Indian lines averaged 1,149*l.* per mile, with a working rate of 53 per cent. But as we find that the traffic receipts of the Oude and Rohilkund Railway, 523 miles of which are open, for 1872-73, were only 55,502*l.*, mainly made up from carriage of third-class passengers, and of food, grain, seeds, timber, salt, and artillery stores, the prospect of a speedy return for outlay on the communications needed to give an outlet for agricultural produce is not brilliant.

Such being on the one hand the want of communication, and on the other hand the small return for that costly convenience of populous countries,—the ordinary railway,—it is matter of surprise that the Government of India have not directed more systematic attention to the development of the cheap and ready service of water communication. It is not possible to extract the existing facts as to the actual water system of India from the Blue Book. They are not given. The question of irrigation is much mixed up with that of navigation; and although the two requisites may be, in many instances, combined, it is necessary in the first place to ascertain the cost and the returns of each of the two services apart. The whole outlay on the Bengal canals during 1873 was 20,828*l.*, and the income 38,145*l.*, showing, the report adds, the existence of a great and increasing traffic. When we add that there are two steam navigation companies running steamers on the Irawadi, which make sixty trips in the year, and that there are also 19,400 boats employed in the Irawadi travelling trade, we have pretty well exhausted all the positive information as to this highly-important subject which is communicated in the report. The statement for 1873-74 is silent as to water traffic. Most of the new roads have been undertaken with the view of forming feeders to the railways. But when we glance at the map of India, and observe the enormous areas which are only fringed by railways, either open or in course of construction, we find but little ground for encouragement. From the Great Indian Peninsula Railway, a line drawn to the eastward, at right angles to the direction of the course of the route, measures the breadth of an area of more than 350,000 square miles of country unpierced by railways, and for which the affluents and channels of the Mahanadi, the Godaveri, the Krishna, and smaller rivers alone can be expected to open practicable commercial routes for more decades of years than we can count. In Rajputana, Central India, Mysore, the south of Madras, and the long extent of British Burmah, the broad bands of inaccessible space are but little inferior in extent to the central provinces. Although for political and military purposes, and to some extent commercially, the great Indian lines are of the utmost importance by way of holding the country; at the same time as a means of developing its resources, and finding outlet for its productions, they are contemptibly and ridiculously disproportionate. The area of England and Wales is 58,320 square English miles. This area was served, at the end of 1874, by 11,622 miles of railway,—a length which allows a mile of railway to nearly every five square miles of country. But, in addition to this, we had 4,138 miles of inland navigation; 20,636 miles of turnpike-roads; and 106,573 miles of highways; making in all 141,969 miles of communication by land and water; while our coast-line is estimated by Sir Arthur Cotton at 3,000 miles of additional waterway. The twelve provinces of British India contain a total area of 943,406 square miles, with a mean density of population of 204 souls per mile against 254 in the United Kingdom. The railway accommodation provided we have seen to be 16,449 miles, or one mile for every 160 square miles; that is to say, a thirty-second part of the English provision. Neither the statement of moral and material progress, nor Mr. Thornton's volume on Indian Public Works, enables us to form any conception, however vague, of the length of the internal roads and waterways of India. But when we regard the density of the population, which rises in Oudh to 469 souls per square mile, and the fertility of which the soil is capable, when duly irrigated, we seem to ourselves to resemble the helpless savages who scratch a few handfuls of coal-dust from an outcrop, as compared to the bold and experienced miners who plunge into the bowels of the earth, and extract the wealth of a 50-ft. seam.

Sir Arthur Cotton, of whom it is justly remarked by Mr. Thornton, "few Englishmen are better entitled to be regarded as benefactors to India," does not speak without the great authority due to successful experience. It is now more than forty years since he was appointed to the post of civil engineer in Tanjore. The soil of this district, naturally a poor light sand, has been fertilised by the alluvial deposits of the water of the Cauvery; the distribution of which in a maze of ramifying streamlets was commenced, it is said, by the Hindoo Rajah Veranum, in the second or third century of our era. Neglect had allowed the steady operation of natural causes to choke up and destroy much of the artificial system which had turned the arid district into an Indian Lombardy. The River Cauvery, which drains a watershed of some 20,000 square miles, divided into two branches, before entering Tanjore. Of these, the northern takes the name of the Coleroon. This branch, having a more direct course and rapid fall, received a larger share of water in the first instance, and by constant erosion of its bed, so gained upon the sister stream that the latter, the Cauvery proper, was all but silted up. Sir Arthur restored the proper division of the stream; damming up the Coleroon, and constructing a regulating dam to prevent the Cauvery, in its

turn, from robbing the Coleroon. The success of this and the subsidiary works was complete. During the next sixteen years at least 50,000 acres of previously waste ground were brought under tillage, and the average produce of the cultivated land was increased by one-eighth. The cost of the works, which thus added a value of at least five millions sterling to the wealth of the province, is stated not to have exceeded 80,000*l.* The increase in the land revenue of the Government arose to nearly an equal amount per annum; that is to say, that the outlay of 80,000*l.* produced 70,000*l.* per annum to the Government, and probably ten times that amount to the province. This is the manner of laying out money in which Sir Arthur Cotton now seeks to interest the engineers, the workmen, and the capitalists of the United Kingdom. These statements are taken from the work of Mr. Thornton.

After thus restoring and enhancing the fertility of Tanjore, Sir Arthur Cotton turned his attention to the deltas of the Godavery and the Krishna. The former river has a water-shed of 112,000 square miles, and a course of 898 miles. It rises in the western ghauts, within fifty miles of the sea, and flows in a south-easterly direction across the whole remaining breadth of the Deccan, entering the Bay of Bengal by several mouths in the neighbourhood of Corindan and Coranada. The last hundred miles of its course lies through the district of Rajahmundy, a province which, thirty years ago, presented an aspect of desolation. It was thinly inhabited, and cultivated only in patches, the river being rather a scourge than a blessing, rising in destructive floods, or leaving the soil to be baked by the sun. Sir Arthur Cotton raised an enormous annicut, or dam, at Dowlaish-weram, between forty and fifty miles from the sea, two miles and a half long, 130 ft. wide at the base, and 12 ft. high. Over this the flood water, which rises to the height of 25 ft., freely escapes, while the ordinary stream is kept at a level suitable for irrigation, and distributed by a system of canals, many of which are navigable. The area thus watered is already 800,000 acres, and will be raised to a million of acres when the work is complete. 256,000 acres have been brought under wet cultivation, and the average produce per acre has nearly doubled. Rajahmundy is now described as a luxuriant garden; and the Government revenue has doubled. The outlay has been 620,000*l.*, a sum which has been repaid to Government more than twice over; while as much as 25 per cent. annual profit is permanently added to the revenue in consequence of the works. The Cauvery canals are now reckoned to pay 23½ per cent. on their cost; the Godavery works are credited with 45 per cent., and the Kistna works with 16 per cent. These may be regarded as exceptional dates. But they are enough to show that it is in the power of the engineer to develop to an enormous extent the fertility of India. The figures are those either of the Blue Book or of Mr. Thornton.

It cannot be denied that the utmost care and experience are necessary for the successful designing of works of this magnitude; and that it may often be the case that the Indian rulers of past times have indicated the nature of those irrigation systems which can now be restored with the best results. It is not, however, so with the completion of water communication. This is a matter as to which we are perhaps better able to form a correct opinion in this country than as to the more lucrative, if less certain, work of irrigation. The blending of India under one rule gives an opportunity, and a reason, for perfecting the missing links of internal navigation such as did not exist under the sway of the native princes. On 300 miles of the Godavery canals as many as 50,000 boats and rafts are now employed in conducting an annual traffic of 870,000 tons; but returns of the general movement by water are entirely wanting.

The first desideratum in this matter is to bring before the public of this country such definite and authentic information as shall allow of a serious consideration of any proposed works from a purely business point of view. Mr. Thornton enumerates eleven groups of canals, on which 17½ millions sterling have been expended, which he states to be now earning an annual profit of 10 per cent. on the average. Of these the least favourable investment is the Ganges Canal, yielding a profit of 4½ per cent. on three millions of capital; and the most lucrative is that of the Godavery Canals, giving a profit of 40 per cent. on 750,000*l.* Investments of this nature, if no *per contra* is forthcoming, render quite unnecessary any appeal to Government to find the money. All that is required is public confidence. Let us be once assured that money can be laid out, with ordinary prudence, so as to bring back an annual steady profit of 10 per cent., and any requisite amount will be forthcoming. It is to this object, then, that the attention of those who desire to endow India with internal communications should be mainly directed. Careful and well-digested statements, capable of official proof, should alone be brought forward. Thus we have cited the price of wheat in Central India, on the authority of Sir A. Cotton, at sixpence a bushel. But Mr. C. J. Shaw writes to say that from 1862 to 1870 the price of wheat over a district of 200 miles extent in Central India was 16 seers, of 2 lb. each, for the rupee; or over 4*s.* a bushel. Another writer gives a price of 1*s.* 6*d.* Unexplained variations of this nature tend to the discouragement of any serious efforts. Chapter and verse must be cited, and no statements made without proof.

Sir Arthur Cotton states that the effect, at the present time of the Ganges, Agra, Lower Ganges, and Sone Canals upon the opening up of the wheat trade between the north-west and England is nothing; but that if these four systems of waterway were connected, the result would be to pour a million tons of wheat per annum into England. To the Ganges Canal reference has just been made, as paying 4½ per cent. only on its capital. The length of the main canal and its branches is 614 miles, giving a cost of a little under 5,000*l.* per mile; a not extravagant outlay to provide for the double requirements of irrigation and navigation. The navigation returns, in 1872–3, were only about 1-20th of the water rents. The Agra Canal was opened on March 1, 1874. The commencement of irrigation was deferred for a six months' trial, and we have no further information as yet on the subject, nor any statement of either cost or length. The area to be irrigated by it is 350,000 acres. The lower Ganges Canal is reported to be in rapid progress. It was commenced in 1872–73, on an estimate of 1,825,000*l.* Its works include a weir across the Ganges at Rajghat. The estimated cost of the Sone Canal is 3,775,000*l.*; and it is intended to irrinate two millions of acres in the districts of Patna, Gaya, and Sháhabad. Heavy works are now in progress on this canal. The average water-rate per acre irrigated in the north-western provinces has been 2½ rupees per acre; and in 1872-3, 940,586 acres were irrigated by the canals, which yielded a gross revenue of 230,000*l.* on a capital of rather less than three millions. The working expenses, however, are more than 56 per cent., which indicates a transition state of affairs, as it is considerably more than double the ordinary rate of canal expense in proportion to income. But under these circumstances an erroneous opinion might be formed from Sir Arthur Cotton's statement that the works undertaken by the Government "form only isolated patches of cheap internal transit." In point of fact, great activity is developed over the whole line indicated as likely to "make the most wonderful revolution in the valley of the Ganges that probably any country underwent in material prosperity." For at least 1,450 miles to the west and north-west of Patna a great system of water communication is in course of completion; and the Blue Book certainly leaves no room for the supposition that the Government is not fully aware of the importance of bringing these several enormous systems of canalisation into complete unity of operation.

We have already intimated that it is probable that the case of the Godavery canals, stated to yield an annual profit of 40 per cent. on 750,000*l.* (corrected to 39·7 per cent on 683,705*l.*) may be altogether exceptional. On the other hand, it must be borne in mind that this is the very system of which we have the longest experience;—so that it is highly satisfactory in this respect, and also as intimating that the profits of other works may be expected to increase, year by year, with the extension and improvement of cultivation. But if we take a more modest return, such as that of the works of the Kistna Delta, paying only 13½ per cent. on 500,000*l.*, it may be conceived that that is not the only spot in India where such a result is now certainly attainable. If such is the case, it is something like crying to Hercules to ask the Government of India to undertake such a work. Not only would it be self-supporting, but remunerative to an extent that would infallibly attract capital, provided that public confidence were established. What new sanction might be needed from Government as to the imposition of canal-dues and water-rates must, of course, be obtained. A full, accurate, and business-like account of similar works (such as those already briefly described) should be published. The exact particulars of the selected case should be ascertained, and also published in such a form as not only to make the matter perfectly intelligible, but to present such quantities to the public as to prevent any mistake as to the *bonâ fides* of the enterprise. It would be naturally expected that a portion of the required capital should be raised in India. Under these conditions we apprehend that there can be no doubt that a comparatively small, well-selected, well-paying scheme might be successfully carried out. The success of one such scheme, perfected under such conditions as are familiar to the public of the country, would do far more toward the endowment of India with public works than anything which it would be in the power of any Government directly to effect. Sir Arthur Cotton says that at least twenty millions sterling ought to be annually spent on public works in India. From the point of view of the engineer or of the philanthropist he, no doubt, understates the amount that can be not only wisely but most productively laid out. But the total revenue of India, for the year ending March, 1872, was 50,110,215*l.* There was an excess of income over expenditure of 1,495,703*l.*; and even if this had been at once made to fructify by investment in reproductive works, it is but a fraction of the twenty millions required. In the same year a total sum of 4,592,166*l.* was paid by the Government as guaranteed interest on the capital of railway and other companies. The net traffic receipts, which go in diminution of this sum, amount to 2,868,948*l.* Thus in 1872 the Indian Government not only gave its guarantee for interest on a sum which, at 5 per cent., does not fall short of 90,000,000*l.* sterling, but actually was out of pocket by nearly a million and three-quarters for so doing. It may very fairly be urged that such an effort is by no means disproportionate to the revenue drawn. It is perfectly true that the apparent discrepancy between the fact that Government undergoes this loss, and the statement that further outlay will be remunerative, may receive a full explanation. The depreciation of silver at the present moment is such as to diminish the value of the Indian revenue by 28 per cent. It was, perhaps, more important for the Government to make its costly communications perfect, than to aid its subjects to water their soil, or even to send their harvests to market. But then the matter must be fairly looked at. The contention of the advocates of public works is, that they will be enormously productive. If so, why ask Government to do more than facilitate their introduction? If a canal will pay 15 per cent.,—all told,—what childish want of self-reliance would be evinced by asking the Government to guarantee 5 per cent.! If a canal requires the outlay of a million, a sure return of 15 per cent. is ample to raise that million. Confidence alone is needed. We do not enter into those details which are more particularly known in India than in this country as to the special facilities which the Indian Government may give. We look at it as matter of finance. We say to Sir Arthur Cotton and his friends, "Prove to those who have the capital in England that by the outlay of so many millions, on such-and-such land, in so many months, they may insure a permanent revenue of 12, 15, or 18 per cent., and the money will be promptly forthcoming. Have but a little patience. Bring all your knowledge of the case to bear to select a good case for trial. Let your first million of capital enter on the steady enjoyment of its 15 per cent.,—not anticipated earning, but audited and vouched profit,—and there will only be too much anxiety evinced in this country to ascertain in what other quarters a like result may be attained."

One word remains to be said. It is not the first time that an attempt has been made to reap Indian wealth by a sickle forged in London. There have been schemes in Madras, Orissa, Bengal, and elsewhere, which are commonly thought not to have proved successful. To establish confidence, which is the great desideratum, it will be necessary openly to admit all cases of former miscalculation, to show where the evil lay, and to make it perfectly clear how misadventure will be prevented in future. It is here that the real knot of the question lies, and those advocates of public works in India will best advance their object who can best deal with this difficulty.

THE NEW CATHEDRAL AT CHESTER.

No one who was familiar with the outlines of old Chester Cathedral would think, on first catching sight of its restored form on entering the town, that the above heading to our remarks was unsuitable or incorrect. The old heavy square mass, time-worn and blackened, which at once stamped the character of the ancient city as we used to sight it from the railway, is no more; and in place of it the traveller sees a gay-looking new tower, with tall turrets and spikey pinnacles, and the couple of rather overgrown and top-heavy conical finials which now flank the east gable of the choir. A closer inspection certainly does not diminish this first impression. Certain portions of the exterior, of which more anon, are untouched; but on what may be called the show side, the south side and east end adjoining the more public portion of the Cathedral enclosure, what we now see is, in fact, a modern Gothic church, a reproduction of a Mediæval building by modern workmen. In saying this, we are by no means hinting a word against the archæological good faith and thorough knowledge and insight with which this imitative work has been carried out. We are quite prepared to believe that there is not a detail in the new work for which at least strong presumptive, if not incontrovertible evidence, had not been picked out from among the mass of nearly shapeless sandstone boulders to which the exterior had in process of time been mostly reduced. We may recognise (though perhaps with a smile) the rather ostentatious fidelity with which a single piece of old stone, not quite so much worn as the rest, is left in the middle of nearly a whole face of new and elaborate work. It would be absurd to say, either, that the new exterior is not, from a purely architectural point of view, superior to the old; seeing that in the old building there was, in fact, very little that could be called architectural design left at all: it had all vanished or become almost unintelligible. It is only when we come to consider the process in relation to the past as well as to the present,—when we are told in effect that the Cathedral is now as good as new, and that in place of destroying the old building the restoration has in fact enabled us to see it in its reality, we feel that there may be room for question, and that on more grounds than one.

Waiving that point for a moment, we will just indicate what are now the characteristics of this part of the exterior of the building, as thus resuscitated, renovated, restored, or by whatever other past participle the reader likes to characterise it. The west front was either less gone than the rest of the building, or else has been to some extent repaired at an earlier date; but a considerable part of the wall surface, and most of the large west window, are untouched. The front is flanked by large octagonal turrets, of which that on the north side is new. We come, at the west end, on what is almost a characteristic of Chester, the predominance of quatrefoil panelling as an ornament. A double row of quatrefoil lights crosses the centre of the window, and has a very rich effect from the interior; and in a similar style is the fine band of ornamental panelling and mouldings, forming an elaborate string-course across the front, rather below the centre of the window. We are here in the Perpendicular period, to which the west window and doorway and the large south porch belong, though the body of the ground story of the nave is of Late Decorated work. The west window is a particularly fine specimen of the tracery design of the period. Coming round to the south side, we find ourselves opposite an aisle of Late Decorated windows, with rather low-pitched canopies over them, and a simple panel design in the spandrels; the buttresses are of bold proportion, with large crocketed finials. The clearstory, of later date, and verging on the Perpendicular period, is very bald in effect, with battlemented parapet, thin, mean-looking pinnacles, a great deal of bare wall, and windows with Perpendicular tracery un-cusped; which latter peculiarity is one of the specialities or eccentricities which add to the archæological interest of this Cathedral. The front of the south porch, which is evidently subsequent to the clearstory work, is very richly ornamented with panelling and pinnacles, but presents the usual hard and wiry aspect of Late Perpendicular work, the character of which is faithfully enough preserved in this part of the restoration. The large south transept carries on, with little modification, the design of the south side of the nave, with which it is evidently contemporary, or very nearly so. This transept, it may be remembered, is of unusual size and extent in proportion to the other transept and the building generally, and has been long shut off from the cathedral internally, and separately used for worship as the Church of St. Oswald, one of the two saints to whom the cathedral is dedicated. The southern extremity of this transept,—the centre portion at least,—was restored in a very hard and poor style some time since, and was in too good a state, practically, to justify its removal, on economical grounds, though it is certainly an eyesore in connexion with the rest, either of the old or the renewed work. Adjoining this we find the one piece of old work of any extent left intact on this side of the cathedral, the extremity of the western aisle of this transept, which serves to show the condition to which the old masonry had been reduced, and, at the same time, to preserve, in its mouldering but still not quite obliterated details, some record of the authority and precedent on which the rest of the work has been restored. The contrast between the appearance of this and the new work is remarkable, and will be looked upon with varying sensations, as our archæological or architectural feeling happens to be uppermost. On the east side of the transept the Late Decorated character of the window-tracery has been retained in the ground story, and the execution of this portion, with the details of the very beautifully-designed buttresses, is certainly an excellent specimen of modern Gothic workmanship as such; and it is almost sad to reflect that, being carried out necessarily in the same quality of stone as the original, it is, of course, doomed to similar obliteration in due course of time. Behind the transept rises the tower, also a perfectly new structure externally, very well carried out in detail, so far as close inspection shows it, but less satisfactory at a distance, from the over-height of the angle turrets and the ragged outline given to them by the too large and projecting grotesque spout-heads with which they are adorned. There has been strong wish on the part of the restoring architect (whether seconded by the clerical authorities we know not) to cap the tower with a timber spire; an addition which, besides interfering with the monumental and masonic character of the building, would have obliterated the last possible faint reminiscence of the proportion and appearance of the old building, and would effectually, in conjunction with the town-hall, have brought the centre of Chester to the condition of a modern Mediæval town. This useless project, we hope, is now abandoned. Coming to the choir, we find an Early English south aisle terminated eastward by an octagonal apse, with an extraordinary pyramid of masonry surmounting it, looking like a hip termination to a very acute, high-pitched roof, which, of course, does not exist. The history of this feature has been before referred to; it was first modelled and then built on the basis of a few indications found in taking down the eastern portion of the south aisle, and by a very clever process of putting two and two together. The apse itself, as well as the pyramid over it, is purely a restoration of what had completely disappeared, except in regard to a few traces and relics of its former existence. The termination of the choir aisles of the Early English building was by an apse, but a square end had been added and the apse removed in the Late Gothic period; and while this later addition has been retained in the north aisle, it was determined to restore to the south aisle its earlier form. This, however, is the second apse of the building, for beneath the third bay of the aisle, counting from the crossing, is found the foundation of the circular apse of the Norman church, and part of the stonework of the present plinth is left out near the ground line at this point, to enable the remains of the Norman apse to be seen. The clearstory of the choir is Late Decorated work; like the nave clearstory it is rather bare in effect. Parapets are the order of the day at Chester; that of the aisle here is an arcade of small trefoiled arches, that of the upper roof an open work of the prevalent quatrefoil form. Both these, if we remember right, had entirely perished; but sufficient fragments existed for their restoration. The octagon turrets at the east angles of the chancel, which formerly were truncated and finished with a lead roofing something like a pepper-box top, are now crowned with the very large extinguishers which show from a distance, and which, whatever authority there may be for them, we cannot admire. The eastern bay of the aisle shows another of the peculiarities of window-tracery which strike one so oddly at Chester. In a three-light Early Geometrical window, the middle light of the lower portion has an extra order of moulding, or rather an extra large section of mullion, having no relation to the rest of the tracery, so that the fillet of this portion projects considerably in advance of the plane of the tracery. What could be the possible motive for such a vagary it is difficult to imagine, or what could be the use of making it over again in this way, for this appears to be entirely new stone, not a repairing of old tracery. The east end of the lady chapel had been, like the end of the south transept, restored to some extent previously, and its renovation has now been completed.

How far this external work, on which so many thousands have been expended, is a satisfactory achievement, it is not quite easy to decide. Restoration may either be archæological, or simply architectural; that is to say, it may aim at gathering up and putting together the evidence as to peculiarities of a structure which have disappeared, and thus reconstructing them historically, or it may aim merely at repairing and bringing into a better condition an architectural design which exists in a complete, though more or less dilapidated, state. The former process is of the highest usefulness, on paper, as contributing to a knowledge of architectural history, but to carry it out in a building is often a very questionable proceeding, since a feature that is really valuable and interesting as an original, may be utterly worthless as a copy. We cannot see much use, for instance, in removing the Late Gothic termination of the choir aisle, and replacing the Early English apse, unless on the plea that the latter is architecturally a beautiful feature; in any other respect it is really falsifying the history of the building. The reconstruction of the pyramidal feature over the apse is an entire mistake. It is an ugly excrescence, which would have been historically interesting had the original existed, but which is merely constructed on conjecture from traces found (for it is impossible to prove that this was the precise proportion and aspect of the original feature), and which as a copy, even assuming it to be an exact one, has not the slightest value of any kind. With regard to the general treatment of the building, the case is different, as this may be said to be a renovation rather on architectural than on merely archæological grounds. There is no question that all that could be called architectural detail had pretty nearly disappeared from the walls, and that even some of the ordinary beauty of decay was absent, since this red sandstone assumes in age a grim, dirty, blackened look, very different from the beautiful and varied tints often found in old and ruined masonry. The question, therefore, was between a reality which presented little beauty save that of association, and an imitation which gave something like the original architectural design of the building. We say advisedly, "something like," for it is idle to tell objectors to the restoration, as they have been told, that the custodians of the Cathedral were enabling them to see the building in its reality. Take it as you may, indeed, an imitation is not the reality; but, more than this, the new work is not, and cannot be, like the old, because, study and copy old detail as we will, there is a spirit, a *je ne sais quoi*, in old workmanship, which is distinct from that of the present day, and which modern restorers cannot really reproduce, charm they never so wisely. Let any one who doubts this compare the rebuilt north side of the cloister at Chester with the corresponding work which formed its model on the west side, and see (after making all allowance for the difference between fresh and old masonry) how tame and weak the new work looks beside the old, in regard to the buttresses especially; and consider that the same kind of difference almost certainly exists between the rest of the new work and the original which it is supposed to revive. The building is now an admirable modern Gothic exterior, deserving all credit as such; but let us not be told that it is the old cathedral over again, for that is impossible.

We have had our say on this point before speaking of the interior, because in regard to this the case is very different, and (with one exception to be noted) there is little room for anything but congratulation on the result. Here the question is not one of cutting away and replacing, but simply of cleaning the ancient work from dirt and whitewash, repairing where necessary (which has been very little), removing unsightly interpolations in the edifice, and

generally refurnishing and redecorating it; and there can be no question that the result has been to bring out wonderfully the interest and beauty of the architecture, which had been almost lost before, and to make a fine, cheerful, and impressive interior of what was previously a very dingy and shabby-looking place. We will take a brief look round the interior, and notice some points of the original design and the present re-arrangement. Entering at the large south porch of the nave, we are opposite what should be the second bay of the arcade; but the western bay has been at some time built up on each side, leaving a mass of solid wall where the arches should be, shutting off at the south angle the Consistory Court, and at the north angle the ground story of the original north-west tower, a good piece of Transitional Norman work, which has long been a dark and unused corner of the building, but which it is now intended to throw open and use as a baptistery. The closing up of the two first arches gives a gloomy and unsatisfactory effect to the west extremity of the nave, not relieved by the very weak-looking Perpendicular wall-arcade which fills up the space below the large window. But turning the other way we look along a Decorated arcade of very fine work indeed, remarkably bold and effective in the sections of the piers and arch-mouldings, and now seen in all the freshness of new stone work, after the scraping off of the whitewash with which it had been completely covered. The south aisle shows a range of stained glass windows put in at different times, and which, without possessing extraordinary merit in any one instance, make a very good and harmonious combination of colour as a whole. In the north aisle the windows were kept high up, on account of the adjoining cloister, and this wall, which is of Norman date and plastered over, is left with the plaster undisturbed, as it was in a very rough state and would not bear meddling with. The nave has the peculiarity of wanting a triforium arcade, though there is a triforium gallery, and the clearstory windows are lofty but weak in design. The rather small and delicate moulding of the vaulting shafts contrasts curiously with the large character of the arcade mouldings. These shafts lead the eye up to the one serious defect which we have already hinted at as existing in the interior restoration, the wooden vault. We object entirely to the employment of wood in this form; it is as complete a sham as anything could be, and the fact of its having been used in some Mediæval buildings makes it no better. To complete the pretence, the external flying buttresses have been built; they never existed before, the Mediæval builders having (quite rightly) deferred building them as long as the stone vault which they were to support was not built. The effect of the wooden vault, left its natural colour, in contrast with the stone springers, is very bad, the more so from the way in which the vault is truncated at the east end from the interposition of the crossing arch, which is a segmental arch with the haunches too high to allow of the vaulting ribs at this point descending to the same springing level as the others. The whole thing looks like a piece of patchwork, a great timber cradling pretending to be a vault. Some improvement would be effected if the lines of the ribs were strongly emphasised by colour or gilding carried down to the cap of the vaulting shaft, so as to lessen a little the harshness of the junction of the wood ribs with the stone springers. But it would surely have been far better to have left the springers as the evidence of the original intention of a stone vault and to have roofed the nave with a genuine timber roof in proper form, instead of making a compromise which is neither one thing nor another, and is totally opposed to all true architectural principle. It might have been possible even to have designed the springing of the roof principals, in such a case, so as to have seated them satisfactorily upon the springing stones, without falsifying either the one or the other.

Looking down the nave to the east end, we now find the crossing intercepted only by the light open canopy work of the return stalls, and the new brass gates of the choir in the centre. Beyond this is the almost uninterrupted view of the choir, fresh and bright in its cleaned state, and terminated above by the Decorated east window above the lady-chapel roof. The effect of the vista is very pleasing, and though by no means prepared to support unreservedly the movement for taking away cathedral organs from the central position, we may admit that an effect is gained in this case. We cannot but remark, however, as one argument often used is that the apparent length of a cathedral is interfered with by the interposition of the organ in the old position, that the effect of the removal of the organ in this case is most unquestionably, to our eyes, to diminish the apparent length of the building, though the change is effective in other respects. Advancing along the nave, we find a new and noble internal effect secured by the throwing open of the great south transept, long shut off as St. Oswald's church. This is still in a state of whitewash as to the walls, but the pews and galleries have been removed, and the area furnished with suitable plain open seats; and when the whitewash is scraped off and the great south window filled with stained glass, the effect on entering the crossing from the nave will be very fine, and the apparent spaciousness of the interior is, of course, greatly increased. The throwing back of the choir-screen to the eastern side of the crossing was a *sine quâ non* in carrying out this arrangement, whereby the crossing space becomes, as it should be, the central space from which everything else opens, instead of being cut off entirely as it formerly was. The crossing arches at Chester offer the peculiarity of being in pairs of entirely different design; the east and west arches being segmental, and springing at an angle with the pier, and with a flat soffit decorated with panelling, while the north and south arches have a moulded section and spring from caps at the impost level in the usual manner. Passing round behind the organ, which now stands under the north arch (as shown in our view given in a recent number*), we come to one of the most historically-interesting corners of the building, in the north transept. Here has been uncovered, in the east wall, the outer ring of the round arch which, in the Norman church, gave access to the apsidal chapel eastward of the transept. A wall-arcade above this is the best and most characteristic bit of Early Norman work preserved in the cathedral. To the right of the position of the arch is to be seen one-half of a well-preserved trefoil-headed piscina recess of Transitional date, which has been cut right through the centre by the respond pier of Decorated date at the angle of the transept and the choir aisle. Against this pier, again, stands one mullion, or upright, or whatever one may call it, of a stone screen of coarse Late Perpendicular work, which probably at one time extended across the north transept. This strange jumble of work of different dates at one angle of the building was entirely embedded in plaster, and is now brought out to the light to tell its tale. We enter the choir aisles through some very fine iron gates of Italian design and workmanship presented by the Duke of Westminster, but the precise history of which we have not obtained. They are, of course, quite out of keeping with the building; but their fine and artistic style and workmanship forms a significant contrast to some of the modern Gothic metal-work which has been put in during the restoration,—the altar-rails, for instance, which are brass-work washed over with gilding, and very feeble and tawdry in style and execution. Passing these gates, we see immediately on the right a cleared space in the floor where are visible the bases of two of the circular piers of the Norman church, the bays of which were much narrower than those of the present church, and which must, indeed, have been a most impressive building in the mass and solidity of its proportions. On the left a door gives access to the site of the Norman apsidal chapel before referred to, which, however, lost its apse form in the Early English period, when it received a square end and a lancet triplet, probably at the same date as the building of the beautiful chapter-house. Close to the door of the apartment a small piece of stone plinth still shows the commencement of the curve of the apse. The choir aisles are laid mostly with the marble pavement formerly in the centre of the choir, and at a certain point a semicircle formed in the tiling in each aisle shows the termination of the aisles of the Norman church. This is a very good way of leaving a memorandum, but the building up of a piece of a buttress in the Early English style, in the Perpendicular chapel north of the lady chapel, just to show that an external buttress was there originally, is a clumsy and unnecessary proceeding, and looks exceedingly awkward. Besides, when these ultra-conscientious pieces of restoration have become old and worn and have lost their distinctive character as new work, how are the archæologists of the future to know what is real and what is not? It is highly probable that all this kind of proceeding will eventually defeat what must be presumed to be its object, and confuse the history of a building instead of illustrating it.

The arcade and triforium of the choir form the finest portion of the architecture of Chester Cathedral; the triforium especially, with its heavily-moulded trefoiled arches, is a beautiful bit of Early English work of the best style. The arch-mouldings of the south arcade present one of the peculiarities of the building, being quite different from any moulding usually found in work of this date, consisting of shallow quarter hollows divided into groups by rectangular sinkings; they form a curious contrast to the deeply-cut pure Early English mouldings of the north arcade. If we step for a moment through the door from the north aisle into the precentor's garden (if he will excuse the liberty) we can see in the exterior of the aisle windows other peculiarities almost unique in English cathedral work; two of the windows having the outer order of mouldings returned downwards and meeting in a point or pendant, leaving a small open spandril below the crown of the arch; the same members in another window interpenetrate at the top in German fashion. In regard to the decorative treatment of the choir, the tiled floor is very good in general effect and tone; the inlaid figures of St. Augustine and others of the fathers are, of course, in that starved-monkey style which is supposed to be necessary for figures that are to be *propria quæ ecclesiis*. Of the bishop's throne and pulpit, which are new, we shall give illustrations; the latter is perhaps the better design of the two; the throne wants a little more filling-in in the canopy, but the work is excellently done, as is the new woodwork in the choir generally. The stalls and canopy work have been cleared of four coats of paint, and at present the wood looks a little raw after the operation, but that will tone down in time. The vault is a wooden one, in place of a plaster one, which was formerly there; as it is decorated in colour, it has a better effect than that of the nave: gilding predominates in the decoration, which partly from this cause seems a little too yellow in tone, but it has the merit of not being too heavy in effect. A view of the new reredos we give in our present number (p. 904). The restoration of the sedilia on the south of the chancel is a point to be noted; the elaborate stone canopy work is, we believe, conjectural only; it is worth remark that one of the arch-heads over the seats, which was missing, was discovered by the present clerk of works, Mr. Osborne, amid the architectural relics in and about St. John's Church, whence it has been conjectured the sedilia (of late date) were brought. The lady chapel does not come under the head of the present restoration work, as it was restored and decorated previously.

A word as to the organ, before we quit the interior of the building. The design (for which see our former illustration) we like very much, and are not ill-pleased to see the quiet gilt pipes for once, instead of the prevalent fashion of prismatic hues all over them; only we think the woodwork looks dingy, and wants some colour, which is perhaps intended. As to the position, there is no doubt that if the organ was to come away from the centre screen, the present is the best place it could have. The practical result is, however, that it does not support the voices so directly or efficiently, and, of course, is not so effectively heard in the nave and choir; it speaks, in fact, straight into the south transept. Some of the lighter stops of the choir organ are, however, to be placed in a small subsidiary organ case, which already stands in the centre of the choir screen, in the position once occupied by the whole instrument, and looking like the "survival of a type." This is the old German arrangement of the separate choir organ (called the *ruck-positiv*, or "back-organ," because it was placed behind the player), in a slightly different form: it will probably have a good bright effect, and combine well with the voices, though it may interfere with the player hearing the singers a little. The large wood pipes of the 32-ft. pedal stop, again, are placed against the wall at the end of the north transept, quite separate from the rest of the organ; as these are pipes of a soft, deep, and travelling tone, there will probably be no disadvantage in such an arrangement in this case; had it been a powerful stop of the reed species, such an isolation from the main instrument (which has sometimes been attempted) would have been in the

* See pp. 760, 761, *ante*.

highest degree objectionable. It is nonsense, however, to suppose that a cathedral organ will ever sound as well in such a side position as in the old central position; and if restoring architects think it will, they know nothing about it. The only reasonable ground for the change is that a cathedral is not a music-room, and that the architectural effect has the first claim to consideration, which is, no doubt, a point open to discussion. The Chester organ is at present partially *hors de combat*, owing to the failure of a "gas-engine," which was to supply the blowing power, to do its work,—a fact which it may be useful to mention in the interest of others who may be intending to try similar means of raising the wind.

Returning to the nave, and passing out by the north door into the cloister, we are gratified to find the old work here perfectly untouched, and to see that there is still a bit of the old and time-hallowed association of the place left, and that the sun can still shine through gleaming foliage on time-worn and broken mullions that are undisturbed by any modern tool. We understand the cloister is not to be touched, and sincerely hope the information is correct. On the other hand, the rebuilding of the south walk of the cloister is a perfectly satisfactory proceeding, the completion or (in the most correct sense) the restoration of an architectural feature which had been destroyed, but for which all the data for restoration are present in the most unimpeachable form. The new south cloister continues the design of that portion of the west side which formed the "reading cloister," where the outer wall and the windows are projected forward so as to widen the cloister walk by about 3 ft., and the springing of the vault is taken by a series of piers continuing the line of the main wall of the other portion. This row of free piers within the wall line is continued along the south side, and the grouping at the angle of the west and south walks is as picturesque a bit of effect on a small scale as one could wish to see. The cathedral wall on the south side of the new walk is the old Norman wall, with its niches which marked the tombs of the abbots, the work in connexion with which has been treated with every care and respect; small portions of the arch-mouldings, &c., being restored, and the rest left; one jamb of the Norman door by which we entered the east cloister is also restored, and the other side left *in statu quo*. This part of the work has no doubt stood better than most of the building, through being partially under cover; but it is remarkable that the north side of the Cathedral generally seems to have suffered far less from weather and decay than the south side; and the chapter-house has on this side been left untouched externally.* In the east cloister, by the door, are piled the bosses from the roof of the Perpendicular chapel at the end of the south choir aisle, which, as we observed, was removed to allow of the restoration of the Early English apse termination. The buildings in connexion with the cloisters should not be overlooked by any visitor. Parallel with the west cloister there is the Transitional vaulted chamber in two aisles, on short round columns of admirable work, referred to in our last article, and which will, no doubt, be presently cleared from its present state of lumber and darkness. Towards the south-east angle, on the same side, a Norman doorway (across the centre of which a pier to carry the cloister vault has been built with perfect nonchalance by the Perpendicular architects) leads to a Norman vaulted passage running north and south, formerly giving access probably to the abbot's house. Over this is the former "Bishop's Chapel," in which a late Gothic vault, just previous to the period when the vault developed into the fan form, springs from Transitional capitals, carried by coupled shafts. At the east end of this, over the cloister, a small chancel has been formed, or at least decorated, in the Renaissance period, with an elaborately-panelled plaster ceiling. This interesting chamber is also in a state of rubbish and whitewash at present, but is otherwise in good preservation. The ancient refectory adjoining the north aisle, with its well-known pulpit, which has long been used as the "King's School," is now to be made into a library in connexion with the cathedral establishment. The chapter-house does not come into the work of the present restoration, save that a new entry to its vestibule is being made from the passage leading out of the east cloister. The said vestibule, with its peculiar arrangement of the vaulting shafts continued direct out of the mouldings of the piers without any impost, was restored some time previously, its entry from the east cloister forming the only new portion of work in this part of the cloister. On the other side of the passage mentioned is the room referred to in a former article as now utilised for a choir-vestry and practising-room. This is the old "guest-house" of the convent, a very beautiful Early English apartment, vaulted in two aisles on slender piers in the centre, and with a group of lancet windows at the north end; it was completely disused and blocked up. The centre piers have an odd kind of rudimentary impost, little more than a roll moulding; if we remember right, a similar feature occurs in some of the work in connexion with St. John's Priory Church at Chester. Indeed, Chester Cathedral is a place full of odd incidents, architecturally speaking; perhaps in part derived from Wales, where Gothic architectural detail assumed so many unusual and abnormal forms. A peculiarity at the north end of the east cloister is to be found in the large circular window, with quatrefoil tracery, which lighted the dormitory stairs, and which (Early English in date), is very unlike anything we are used to in Gothic. The springing of the Perpendicular vaulting-ribs at this point has been hung in front of this window, corbel fashion, with most delightful unconcern. The trace of a similar window, subsequently walled up, is seen higher up, following the slope of the stairs, the door to which, in the north-east angle of the cloister, has also peculiarities of its own.

We observed that the King's School is to be turned out of the old refectory. Its new habitation is being provided at the north-west angle of the Cathedral, on what is believed to be the site of the former bishop's palace. A portion of the building next to the west front of the Cathedral, and up to the first-floor string, has been built from Sir G. Scott's design, and is a remarkably effective bit of work, with its deeply-recessed traceried windows between boldly-projecting buttresses. The main portion of the building is being carried out by Mr. Blomfield, and is not as yet forward enough to speak particularly of. It ought to make a pleasing adjunct to the Cathedral. Some mean third-rate patent brick houses or shops just opposite disfigure this angle of the cathedral close greatly; but on the south side we observed with pleasure the picturesque character and excellent workmanship of the new shops and houses which adjoin the site here, and which are a credit to whoever designed and built them. The whole site, taken in connexion with the restored Cathedral, has a very "modern-antique" appearance, it is true; and the old Mediæval names which distinguish some of the neighbouring streets and alleys suggest associations with which the old Cathedral certainly harmonised better than the new one. Yet, balancing the difficulties with the drawbacks, we must look impartially at what has been accomplished, and admit the energy and ability displayed in carrying out the work, and the good intentions of those who first initiated it.

* There is a probability, it is true, that the north clearstory of the nave has been repaired at a later date, and is not in its original state; but the chapter-house exterior is the original Lancet work, and it is remarkable in how much better preservation it is than was the much later work on even the most sheltered parts of the south side. The earlier builders must have selected the stone more carefully.

TRACERIED WINDOWS.

AMONG the various propositions that have been made towards promoting a new or original style, has been the suggestion that Government should put a tax on every traceried window, by way of depriving the practitioners of modern Gothic of their chief source of effect, and driving them to invent some compensating feature for themselves. Whatever may have been thought of such a proposal, it would be superfluous now. To drop tracery and adopt perfectly plain windows is almost *de rigueur* in Gothic design now, even in the case of churches. In this respect we have progressed exactly in the opposite direction, in revived Gothic, from that of genuine Gothic. We commenced by a great admiration for and imitation of Late Decorated and Perpendicular window-tracery, which was even imitated in cast-iron when its production in stone was considered too costly or troublesome. The elaboration of a large window of flowing tracery was the pride of the earlier revival architects and the masons they employed; and the correct and neat drawing out of such a design was a test of the skill and application of young draughtsmen and pupils in the office, and their proficiency in the use of their instruments; and no bad test either. Then it was seen by more thoughtful votaries of tracery that the geometrical style had the advantage of giving regular and symmetrical lights as well as a regular design for the bars, and perhaps the gradual perception that the earlier forms of Gothic generally were more dignified and more true in architectural feeling than the later, helped the change of taste. We kept at first, however, to the true tracery, with its mitres and intersecting fillets, and carried it out in large and elaborate designs. Gradually, however, even this began to be looked on as over-ornamental and meretricious, and we went back a stage and imitated the immature forms of "plate-tracery"; a complete mistake, as this is really neither one thing nor another, but only an experimental stage in the development of this feature in Mediæval design. This immature and often awkward form of window design was, however, adopted a great deal, and for a time almost exclusively, by some of the ablest modern Gothic architects, and gave, in conjunction with other peculiarities, a certain character of its own to one phase of Victorian Gothic. As far as we have observed, however, even those who were most in love with this style of window are now abandoning it, and with good reason, for its employment almost always gives an air of heaviness and want of finish to the decorative treatment of the building in which it is employed. It is, in fact, good in effect only from the interior, and for the use of stained glass especially, in apartments not over-much lighted and where the eye is consequently directed almost entirely to the shape of the lights, and not to that of the divisions. A large number of Gothic designers have now taken the final step, and gone back to plain pointed windows without any tracery. Where tracery is used at all in recent church designs, it is usually now in very simple forms, based on either geometric or late Gothic models, but rarely on the more flowing forms and in the more exuberant taste of the Late Decorated style, which, in fact, would be out of keeping with the manner of Gothic, in regard to other details, which is now most in favour. The little tracery that is now used is generally true tracery as far as it goes, and the hole-punching style called plate-tracery is rarely employed now by architects with any pretension to a refined taste in regard to detail; but it is very common to find this characteristic feature of Gothic architecture omitted altogether by the designers who claim to have most affinity with the true Gothic spirit, and the stern simplicity of plain lights taking its place.

If this change of taste is the result of a desire to avoid all mere copying, and of a conviction that tracery is opposed also to the utilitarian objects of a window as an opening for admitting light, there is little or nothing to be said against it on principle. But it rather arises, we imagine, from the lately developed tendency to extreme purism in church architecture, and the preference shown for early forms of the Gothic style which have not yet been so completely worked out by copying as the later forms, and, therefore, seem to have a comparative freshness and novelty about them. It would, however, be a very incorrect criticism which would assert that the Gothic style was really in its best and finest phase in this unadorned stage of its existence, and that the development of such a decorative feature as window tracery was a mark of decadence. It is, in fact, one of the most beautiful and one of the most naturally and logically developed features of the style, though eventually over-worked and misused, as most inventions in architectural design are in the end; and a fitter use for the modern architect to make of it would be, not to neglect it altogether (under the plea of avoiding copyism), but to consider what new or modern application of the same idea is possible, what there is that has been left undone, though suggested, by the Mediæval builders.

It is curious that window tracery, as an important source of architectural effect, has been developed in the most southern and in the most northern of the important styles of the world, and neglected in those which occupy the intermediate latitude. When we say, "most southern," we should rather say, "most tropical," which is the real point as regards the influence of climate on the form of the window. Saracenic architecture has its elaborate window traceries, which are evidently in part a natural suggestion for tempering the glare of a hot sun; an ornamental screen, in fact. The only other school of tracery

in an elaborate form is found in the northern styles of Europe. Southern Europe, in its most important styles, misses this element of architectural effect altogether, though under a sky far more suggestive of contrivances for tempering light than that under which the northern Mediæval style was developed, and far more fitted to give brilliant effect to any elaboration of the window-decoration, as seen from the interior especially. But the Italian architect was content to accommodate his building to a bright light by the simple and prosaic method of making very small windows, in his churches especially, and occasionally of recessing them behind a loggia in the case of domestic buildings. In the northern styles, the development of tracery, which practically is a device hardly suited to, at any rate not suggested by, a cloudy atmosphere, sprang in the first instance from a purely architectural motive, and owed its further elaboration probably in great measure to the taste for stained glass, and the desire for as full a field as possible for its exhibition in an effective framework. But Gothic tracery has always retained, in English work particularly, the recollection of its constructive origin. It is never a mere toy; the lines of its construction are always emphasised; in its latest form, which gave the name to the "Perpendicular" style, this constructive character is more marked even than in some of its earlier forms. In this respect it is essentially different from Saracenic tracery, which is almost always more like an ornamental window-frame or a permanent curtain, fitted into the window-opening, than like an integral part of the constructive design of the window.

These two perfectly distinct phases of window-tracery have each their suggestions, however, for further extension and application by the modern architect. The Saracenic traceried screen, certainly, is more the feature for a tropical climate than for a northern one; yet there seems no reason why such a method of permanently filling up a window-opening, in an apartment intended especially for summer use, should not have its appropriate application in our dwellings. During this summer, indeed, we have had valid excuses for the adoption of almost any device in building supposed to be specially suitable for tropical climates. The Saracenic window is quite out of keeping, it is true, with our look-out-of-window habits of life; it is a device telling of an interior jealously concealed from the neighbours, of a home of luxury rather selfish than social. In ordinary situations, even plate-glass would be preferred, in an English house, to those mysterious-looking infinitesimally divided stained-glass windows, the jewelled effect of which makes so much of the charm of colour in the interior scenes of Gerôme and Lewis. Yet there are plenty of opportunities, where windows are required which are to admit of light but not sight—borrowed lights or lights looking out on ugly contiguous brick walls, as is so often the case in towns, where something after the manner of the Eastern traceried screen would be a grateful substitute for "best polished plate-glass ground on one side," or even for some of the more ornate, but hardly more tasteful forms of obscured glass, of which one sees so much. Our interest, however, is more with the masonic form of Gothic tracery, as more strictly architectural as well as indigenous to the country. And in the application of this to domestic architecture in particular there seems to be room for novelty and originality; for something to be done more than has yet been attempted. The northern form of tracery, which confines this decoration to the head of the window only, and leaves the lower part open, is not unsuited either to this climate, or to the requirements of lighting in dwelling-houses. In regard to the latter point, one has only to notice how constantly, in the rooms in which people daily live, the blinds will be found drawn only part way up, and the upper portion of the window left, by preference, in semi-obscurity. An apartment for effect is lighted from above; an apartment for use, in the majority of cases, is more comfortable and agreeable to the eye when lighted low. Tracery, considered practically, would be only the permanent blind softening the glare from the upper part of the window, and at the same time giving opportunity for decorative effect, both internally and externally, and for extending the window, and thus assisting the filling up of the architectural scheme or design, without either over-lighting the interior or rendering the exterior bald and blank by the presence of large and staring expanses of glass. But what is further worth considering is that an attempt to work out the feature of tracery more freely in domestic architecture would probably show that the possible forms of this class of design are by no means exhausted. In applying tracery to modern churches, the architects of the present day have mostly been content to use up old forms. In applying it, or something like it, to domestic architecture, there has been a general tendency to confine it to the mere mullion-and-transom device, as if anything else were unsuitable for a dwelling-house and for the square-headed window which is usually the most convenient and suitable form in domestic architecture. A combination of this square form of the leading lines, with some of the more ornate and flowing detail suggested by the geometric and "curvilinear" tracery styles would in itself lead to a good deal of novel treatment, without taking into account the variety of geometric and other forms and combinations which are still almost untried. At all events, the recurrence in modern Ecclesiastical Gothic to the plain window looks as if a source of purely architectural decoration were to be abandoned which has not by any means been worked out, and which is capable, in Ecclesiastical architecture to some extent, but in domestic architecture to a much greater extent, of a more varied application and development than it has yet received.

THE WORKS AT COLOGNE CATHEDRAL.

WE have received the following letter:—

Sir,—The amusing self-sufficiency, not to say the raw ignorance, in the attempted criticism of Cologne Cathedral,* the greatest and most perfect masterpiece of pure Church Gothic extant, is too apparent to deserve more than a passing feeling of contempt mingled with pity. Such clumsy hypercriticism one could hardly afford to notice were it not for the publication of it in your widely-circulated journal amongst so many of the *uninitiated in art*, and thus to protect them from erroneous impression and prejudice. FRED. SANG.

If Mr. Sang had restrained his pity for our "raw ignorance," and carefully read our "Notes from Germany," he would at once have seen that our criticisms upon Cologne Cathedral had reference solely to certain *modern* works executed in connexion with this magnificent church, namely, the terrace, the fountain at the east end, and the modern portions of the west front. Now, if Mr. Sang chooses to consider either the new terrace or the wretched little fountain "a masterpiece of pure Church Gothic," we must beg to differ from him; and if Mr. Sang thinks the modern portion of the west front anything like what the Mediæval architects would have done, we cannot agree with him. It is precisely because we so much admire the *ancient* portions of this cathedral that we regret the want of true Gothic spirit shown in some of the *modern* additions.

We have, of course, been told that the new west front follows the ancient design, and to a certain extent it does carry out a drawing discovered some years ago, and preserved in the cathedral; but, in the first place, very little is known about this drawing: it may even be doubted whether it is a Mediæval drawing at all, and, even supposing it to be so, there is nothing to prove that it was more than a suggestion for completing the cathedral. That it was, at any rate, a design which had been abandoned or modified is proved by the fact that the small portion of the north-west tower which had been erected did not agree with this drawing. And even supposing this "design" to be all that the Cologne people would have us believe, surely Mr. Sang can understand that a design may be ruined by the poverty and want of true artistic feeling shown in carrying out the details. Whatever the defect may be, or from whatever cause it arises, we must still retain our opinion that this west front is a most unsatisfactory production, and totally wanting in that artistic feeling shown in all the ancient works of the kind. If our angry correspondent will compare the treatment of this front and its details with the same portion of the cathedral at Ratisbon, he will understand why we say that this portion of Cologne Cathedral is entirely wanting in Gothic spirit and true artistic effect.

We repeat some of our criticisms upon this portion of Cologne Cathedral, and we defy Mr. Sang or any one else to contradict them. We said that the design was monotonous. Now, who can deny this when the six great buttresses are all exactly alike, and one tower is the exact counterpart of the other,—when all the windows are so exactly alike that they might have been cast in one mould,—when not even a moulding or a capital is varied? How different are all the ancient fronts to this. Look, for instance, at Ratisbon. The general effect is uniform, but when one comes to examine the detail, what charming variety we find: no two buttresses quite alike, and all the detail varied in a most artistic manner. We said that "this front was wanting in that grand effect of light and shadow to be seen in the great French churches, and we missed those deep portals with their solemn gloom." Well, this is no mere matter of opinion: it is a matter of fact, which even Mr. Sang cannot deny. We said that this front has not the quiet look of dignity to be seen in some of our English cathedrals, and we repeat this self-evident observation. We said that the west front of Cologne is a "correctly insipid" work, by which we meant to convey the idea that it is a mechanical and not an artistic rendering of the design. And, unfortunately, this is the great defect of nearly all the new work at Cologne Cathedral, where mere mechanical reproduction sufficed for the carrying out of the ancient design. The work has been well done, but where a little artistic treatment was required we look for it in vain. To give a few examples of what we mean, let our readers next time they are in Cologne look at the cast-iron flèche over the crossing. Is it possible to conceive anything more ugly or ill-designed? And the worst of the matter is, it is so badly treated as to scale that it makes this immense church look about half its size, and disfigures the building from every point of view. Again, the huge cabbages with which the modern builders have terminated the transept ends, and the Brummagem Gothic altar under the crossing, show an entire want of artistic feeling. To accuse us of raw ignorance and presumption for criticising these defects in the modern portions of Cologne Cathedral is simply ridiculous. The "raw ignorance" is rather on the side of those who cannot draw a distinction between the ancient work at Cologne, with its artistically executed details, and the modern portion of the same church, with its vapid, mechanically-executed detail. In conclusion, we beg to assure Mr. Sang that we have every respect for the works of the ancient architects and workmen of Cologne Cathedral, but we decline to extend that feeling to the works of some of their modern successors.

* See p. 874, *ante*.

MOVEMENT IN INDIA.

FROM a minute published by Sir John Strachey, governor of the North-west Provinces, on the preservation of works of art and antiquity in those provinces from 1872 to 1875 inclusive, it appears that an expenditure of 16,758*l*. on the Palace buildings, Agra fort, and on the Taj Mehal was sanctioned, of which sum 7,958*l*. were spent on the Taj Mehal alone. Besides these two interesting works a sum of rs. 1,968 has been spent on Futehpur Sigri, and on the temple of Govind Deva at Brindaban Muttra rs. 19,533 have been laid out, and still the work of improvement is not completed. Further estimates have been prepared to the extent of 69,123*l*. to be expended on the above works, including the magnificent buildings at Jaunpeor.

The *Madras Mail* understands that Mr. Melville, C.S.I., agent to the Governor-General at Baroda, has, at the request of Sir T. Madhava Rao, applied to the Madras Government for the services of Mr. Chisholm, the Government architect, who was shortly expected to arrive at Madras, *viâ* Bombay, from England. Sir T. Mudhava Rao intends erecting a high school at Baroda, and wanted Mr. Chisholm to devise a plan, offering a handsome honorarium and expenses, but the Government, which has the first claim to his services, has declined to allow him to go on account of the quantity of work which has accumulated during his absence.

Some remarkable archæological discoveries have been made in carrying out excavations on the banks of the Kishengunga, near Mozufferabad. Several large slabs have been recovered, one of them being so heavy as to need the united strength of a dozen men to lift it. It is sculptured with delineations either of Hindoo mythology, or the still more ancient figures and symbols of Buddhism; but which of the two the learned in such matters have not yet had an opportunity of deciding.

It is rumoured that Sir Andrew Clarke's scheme for the re-organisation of the Public Works Department will be ready shortly, and submitted to the Government of India, so that the changes and reductions therein contemplated may be introduced and effected before December next.

A carved stone pulpit has just been put up in the station church at Simla to the memory of the late Bishop of Calcutta. It is of native workmanship, but is said to be exceedingly well executed, and is the first memorial which has been erected in honour of the deceased prelate in India.

PHOTOGRAPHICAL RECORD OF HISTORICAL BUILDINGS.

THE Society for the Preservation of the Ancient Monuments of Alsace has adopted a resolution at a recent meeting which will meet with universal approval. It has been resolved to take photographs of all the ancient and peculiar houses for which Strasbourg is celebrated, but which are in danger of destruction. Two houses especially, of considerable archæological interest, have been condemned, and must soon be pulled down to make room for modern improvements. The architectural and historical merits of the buildings will not, however, be entirely lost to future generations. According to the resolution just adopted, the Society will take the most elaborate photographs of these constructions before they are submitted to the desecrating touch of the pickaxe. In these days of reconstruction and of sanitary improvements the Alsatian society gives us a good example; and we venture to submit this fact to the local and municipal authorities of this country. Where no private bodies are willing to undertake such a "work of love," perhaps even ratepayers would not object to the very trivial outlay necessary to secure photographs of remarkable houses before they are swept away for ever. Local museums might be enriched, at a very small cost, by these mementoes of the past; which would, indeed, be of great historical, artistic, and technical value. It would be interesting, for instance, to know whether photographs were taken of the many artistic beauties for which the interior of Northumberland House was celebrated. The authorities by whose decision London was deprived of this ancient mansion might have insisted on preserving, with the assistance of the photographer, the memory of its former glories. Doubtless a suitable place for such a collection of photographs might be found at South Kensington, or at some other museum equally accessible.

But in Paris, more than in London, the adoption of some measure of this description is particularly needed at the present moment. Besides the vast schemes which are now under discussion, several public works have been already commenced, and notably the completion of the Boulevard Saint-Germain. Stretching from the Halle-aux-Vins over the Pantheon and Luxembourg quarters, this boulevard cuts right through several blocks of old houses situated between the site of the ancient Abbaye and the modern École de Médecine. The dark, confused, incongruous buildings, divided by the narrowest of streets and little courts, which the new boulevard is destined to destroy, stood on historical ground held sacred by the true Parisian. This group of old houses, inhabited by many generations of Quartier Latin students, has often been designated as the cradle of the great Revolution. Here the Cordeliers congregated, and the courts and alleys now pierced by the new boulevards have again and again echoed to the thunder of Danton's oratory, of Desmoulin's eloquence, and Marat's denunciations.

Legendre, Fréron, d'Eglantine, Brune, Jourdenil, Chaumette, Vincent, Mornoro, harangued the angry inhabitants of these little streets, in the midst of which they lived, and fanned the flames of revolution that spread from this quarter over the whole of France, indirectly affecting the legislatures of even the most conservative countries in Europe. Already, at the entrance of the Passage du Commerce, the walls that sheltered one side of Danton's house have been brought down, thus exposing his favourite room to the gaze of all who pass along the street. The house in which Marat lived and was assassinated is, we believe, still standing, though doomed to destruction. At the extremity of the Rue de l'École de Médecine and the ancient Rue des Boucheries, there remained the room where the civic committee of the Section des Quatre-Nations were in the habit of meeting. In the Cour du Commerce, Duplain, the printer, had his abode; while, close at hand, in the Rue du Paon, was Chaumette's modest home, which he did not forsake when appointed Procurator of the Commune in 1793. Many other equally interesting details might be mentioned concerning this quarter, and we trust that such historical *souvenirs* will not be swept away without first securing illustrations of the abodes of these celebrated men. This historical evidence is more than curious, for it may vindicate many a reputation from the libels that spring from party animosities. Thus, for instance, it is sufficient to examine the house and furniture of Danton to understand how little he deserved the title of the "leader of the corrupt party." When he is accused so often of loading himself with gold pillaged in Belgium, and living a life of degrading vice and luxury, there is some use in keeping illustrations of his home,—a home, indeed, so simple and modest in its every detail as to set at nought the reckless assertions of ignorant or unscrupulous adversaries. The removal of stone and mortar pregnant with so much useful information, and which served as a chronicle of the most stirring episodes of modern history, must deeply concern all who have some respect for the lessons taught by the past.

SUSSEX ARCHÆOLOGICAL SOCIETY.

THE annual meeting of the Sussex Archæological Society was held at Arundel on the 31st ult., when, notwithstanding the unfavourable state of the weather, there was a goodly muster of the members and their friends.

The party arrived soon after eleven o'clock at Ford Junction, where carriages were in waiting.

Climping Church was the first halting-place. Climping is a small parish lying between Ford and the sea, including all that remains of the ancient parish of Cudlawe, or Cudlow, only about 100 acres of which have escaped erosion by old Neptune. Mr. Gordon M. Hills, the architect under whose supervision this interesting edifice was restored a few years since, acted as *cicerone*. In the course of his remarks he said Climping Church was one of the most perfect and interesting of the ancient churches of Sussex. There had been a church here at a very early period, and mention was made of one in Doomsday Book. That there had been one of very early date was apparent from the fact that traces,—though they were but shadows of traces,—of it still existed; yet the height and dimensions of it could be seen by the church as it now stood. It was cruciform in shape, and was evidently built at two periods, owing its completion to the nuns who resided at Leominster, in connexion with the Abbey of Seez, in Normandy. The oldest part of it is the chancel, the tower being built in the time of Henry II.; not long after which the nuns built the complete body as it now stood,—one of the most perfect specimens of church architecture of the thirteenth century. It had undergone no changes. The door in the tower, on the west side, was the only ancient door; but a window had been converted into a door in the reign of Charles II., which was really the only alteration that had been made. It had been restored, and, in doing that, they had been guided by what was found on the spot. The pillars were all the old ones, having merely been cleansed; and in reseating the church they had been guided by a number of ancient seats which were found in it, and which were now ranged down the passage. The pulpit is the original one. In early times the population of the parish was very small, and the pulpit was near the south door; but when the building was reseated, the pulpit was put into its present and more convenient position; and he hoped that, in doing that, nothing had been done to offend archæologists. Referring to the ancient boundaries of the parish, Mr. Hills said it formerly belonged to that of Cudlawe, but was now annexed to that of Arundel; and, alluding to an adjoining parish, he concluded by saying that he had attended the church at Middleton, which had been since washed away by the sea. The visitors then inspected the various points of interest about the church, including a curious oaken chest, thought to be coeval with the church.

Ford Church was next visited, Mr. Gordon Hills describing the building, which is exceedingly small. It is a very curious specimen of ecclesiastical architecture, having only a very ancient chancel and nave, the former being the larger of the two; the latter seating about fifty persons. The walls are Norman. Mr. Hills said there were the remains of an aisle outside which seemed to have been built about the year 1200; but, judging from its appearance, it was not long in existence. It seemed to have been erected in anticipation of a rising parish, but, as the population remained stationary, it was removed in the next century. The columns were evidently about 4 ft. 6 in. high; but they would be better comprehended by a visit to Tortington Church, where they were discovered and restored. The only interesting thing in the church is the font, which is a square block of Pulborough stone, its sides being as unfinished as when rough-hewn from the quarry.

Tortington Church, which, like that at Ford, is very small, was then visited. It was restored twelve years ago by a local builder, the outlay being borne by Mr. Leeves. The principal points of interest are the semi-circular arch in the south door, and the arch dividing the chancel from the nave. They are of rich workmanship; the latter having a grotesque moulding, ornamented with the heads of birds and beasts. During the restoration, in 1864, a stone was found exactly fitting an opening which had been built up 200 years before, when a doorway was removed from one to another part of the church.

Arundel Castle.—By permission of the Duke of Norfolk, the members and their friends were allowed to inspect the interior of Arundel Castle. His Grace, besides throwing open the interior of the castle to the society, showed his hospitality by entertaining his visitors with light refreshments in the Barons' Hall. Having partaken of this, they roamed at will through the several rooms. The original castle, which was of a very remote antiquity, dating from the Saxon era, was destroyed in the Parliamentary wars, having stood a siege of seventeen days in the winter of 1643–4; but the present castle was re-built on the original lines in 1791 by the then Duke Charles. The ground plan—the walls being from 5 ft. to 12 ft. thick—very nearly resembles that of Windsor Castle, and the building is not dissimilar in elevation. Having visited the keep, the party proceeded to the tombs in the Fitz Alan Chapel—or Collegiate Chapel and Chapel of Our Lady,—the gilded roofs and fine carvings of which have been allowed to decay year by year since the Reformation. The interior of these once beautiful chapels—the Collegiate chapel forming the chancel of St. Nicholas parish church of Arundel—is rendered more desolate by the present duke having filled the chancel arch with plain red bricks to cut it off entirely from the church.

Luncheon was partaken of in a marquee in the Park at Arundel. The Rev. W. Powell, in responding to the toast of "Success to the Sussex Archæological Society," said that since their last meeting they had lost two old and valued contributors to the archæological literature of Sussex in the persons of Mr. Durrant Cooper and Mr. Mark Antony Lower; and he should not be discharging his duty to the association did he not take this opportunity of recording their deep regret at the death of these two well-known members. Each in his respective province was unsurpassed, Mr. Cooper having especial knowledge and experience in Mediæval Latin, and being most indefatigable in his researches. To him they owed many corrections in their papers, in which accuracy was most desirable, and where its absence would have been most detrimental. Mr. Lower was a self-made man, with a remarkable talent and genius for heraldry and genealogy, as well as for archæology and biographical research. No one could read his papers published in the collections of the society without learning something.

Next year's meeting of the society will, probably, be held at Mayfield.

Thames Valley Drainage Act.—The Commissioners are re-constructing the bridge over the river Ray, at Islip, Oxon. The bridge is the property of the Ecclesiastical Commissioners, and it was considered unsafe for public traffic, and had been indicted. The Ray is one of the rivers that will probably be improved under the powers of the Thames Valley Drainage Commissioners. The two Commissions therefore united in contributing to the cost of re-erecting it. The works are in rapid progress under Mr. Grantham's superintendence; Mr. Maxwell, of Plaistow, Essex, being the contractor.

THE GREENWICH NEW PUBLIC OFFICES.

THE new offices which have some time been in course of erection for the Greenwich District Board of Works are fast approaching completion. They are situated in the Greenwich-road, not far from the railway station. The building has a main frontage of 61 ft. in length, and the general elevation is 36 ft. in height from the street level. In the central portion of the elevation there is a clock tower carried to a height of 13 ft. above the main body of the building, terminating with a dome and lantern-light, 7 ft. high, the entire height of the tower and dome from the ground-line being about 56 ft. The building has a handsome circular portico entrance, projecting 6 ft. beyond the main body of the elevation, and surmounted by a balustrade. There are also similar balustrades on each side of the clock tower. The structure, which is two stories in height, is built of yellow brick, with a free introduction of Portland stone for dressings and ornamentation. On each side of the entrance double stone pilasters are carried up to the top of the building, and a deep stone cornice runs across the elevation immediately above the ground-floor. There are ranges of three-light windows on each side of the elevation, with a central lofty window, and two smaller ones on either side, in the central portion, above the entrance portico. The elevation is surmounted by a stone cornice and parapet. The entrance leads into a vestibule, 11 ft. square, from which the offices on the ground-floor are reached along corridors on either side of the main central staircase, the corridors being 5 ft. 3 in. in width. The ground-floor contains all the general offices, including the clerk's private office and those of his assistants, together with the offices of the surveyor, the engineer, and the accountant, strong-room, store-room, lavatories, and other conveniences. The stone staircase leading to the upper floor is 5 ft. 6 in. in width. This floor contains the Board-room, a spacious apartment, 57 ft. 6 in. by 40 ft., and very lofty, being 22 ft. in height. It has a coved panelled ceiling, and is intended to be elaborately fitted and decorated. This floor also contains several committee and waiting rooms. In addition to the ground and upper floors, the building has also a large and convenient basement, in which are the caretaker's apartments, and a number of store-rooms. It should be added that the ground-floor is considerably above the street level, and is reached by a flight of five steps under the portico. The building is seen to much advantage, having an area in front 20 ft. beyond the street line.

The architect is Mr. Wallen, of College-street, City; and the builder is Mr. W. Tongue, of Plumstead.

NOXIOUS TRADES IN THE METROPOLIS.

NEW SANITARY REGULATIONS.

WITH the view of abating the nuisance caused by certain trades carried on in different parts of the metropolis, and improving the sanitary condition of those localities, the Metropolitan Board of Works are about to enforce the adoption of new and more rigid regulations, which have just been decided upon. The particular trades and manufactures to which the new regulations are to apply are specially set out, and they embrace catgut manufacturers, manure manufacturers, blood and bone boilers, soap boilers, and tripe boilers. The carrying on of the whole of these several trades is more or less offensive, and injurious to the health of the inhabitants in the districts where the manufactories are located, and the object of the Metropolitan Board appears to be to reduce the nuisance to a minimum. With respect to the establishments where the manufacture of catgut is carried on, and which is exceptionally offensive, the mechanical and other arrangements to be in future observed are particularly stringent. In the first place, the material used in the manufacture is not to be allowed to come upon the premises except in iron vessels firmly closed, and from which no foul odour can possibly be emitted. Chambers for the carrying on of the manufacture are to be constructed according to designs prepared by the Board, and the vessels containing the materials are not to be opened, nor the preparing of the catgut carried on, in any place but these chambers, the object being to prevent the emission of offensive smells, such as are now experienced at these manufactories by the residents in the districts around them. A further regulation stipulates for the air in these chambers, during the time the process is going on, being conveyed through a shaft into a furnace. The regulations likewise provide for similar precautions being observed in every apartment in the manufactory where the process of manufacture is attended with the foul odours above referred to. Provisions are also laid down as regards the structural character of the buildings, one of which is that all the window-sashes are to be so constructed as to be perfectly air-tight, and the glass in the windows themselves is not to be under a quarter of an inch in thickness. As regards the boiling trades and manufactures, the regulations direct that all boilers emitting offensive and noxious vapours are to be so constructed as to secure the vapour passing through the furnace fire. The thorough cleansing at intervals of the buildings internally is also insisted upon, the regulations stating that the walls are to be limewashed every three months. No garbage or offal of any kind whatsoever is to be exposed, but to be kept in iron vessels closely secured, from which no smell can escape.

EXTENSIONS AND IMPROVEMENTS IN NORTHAMPTON.

THE *Northampton Mercury* gives an account of the past year's building operations in the town, which have been somewhat active, notwithstanding the general depression of trade.

The new Masonic hall and buildings are fast approaching completion. They stand on the site of the old Temperance Hotel, and have a frontage in Abington-street of about 47 ft. This frontage, with the exception of the central gateway on the ground floor, is occupied by two houses and shops, the Masonic hall and offices being at the rear. The houses have equal areas, and, including the basement, are five stories in height. A common corridor runs from front to back of the buildings, by means of which access is gained to the Masonic hall, as also to the private entrances to the houses. The Masonic buildings at the back consist of a large hall on the ground-floor, with the requisite offices, intended to be let for the use of Oddfellows and other kindred benefit societies; and a large room on the first floor, with ante-room, &c., for the exclusive use of the craft. The buildings are in the late French Gothic style, and are of red bricks, with Bath-stone and terra-cotta "dressings." Moulded bricks from the Vigo Brick Company's Works are used to the jambs and heads of windows. The carving is quite a feature of the Abington-street elevation, and has been executed by Mr. T. Bromfield, of London. The whole of the works are being carried out by Mr. John Watkin, of St. George's-street, from the designs and under the superintendence of Messrs. E. F. Law & Sons, architects.

In the Leicester-road there are signs of activity in connexion with another craft. The decision of the War Office authorities to constitute Northampton a depôt of the Northern Military District, of which it is understood that Warwick will be the centre, has necessitated a considerable enlargement and many important alterations of the barracks. Occupying a large area of ground as the premises must have done to meet the requirements of a cavalry barracks, the work was able to be proceeded with without purchasing additional property. The old buildings are built of white stone, and range along the head of the ground. On the left of the gateway leading from the Leicester-road is the guard-house, and on the right the various shops, &c. Opposite the entrance is the block constituting the officers' quarters, flanked on either side with two larger blocks, which form on the ground-floor the stable, and on the upper floor soldiers' quarters. At the rear is a large open space serving as a parade-ground, and on the south-west is the hospital. Some considerable time has elapsed since any artillery or cavalry were located here, the barracks having been occupied by detachments of the 48th and 58th Regiments of Foot. It has been decided that only infantry is to be stationed in the town in future, therefore the old stables, &c., have been, or rather are in process of being rendered serviceable for their future occupants. In addition to this, it has been found expedient to erect new buildings and provide accommodation for supplementary detachments, consisting of 120 men, four non-commissioned officers, thirty-one married soldiers, with an infant school, sergeants' mess, with reading and recreation-rooms, stabling for five horses belonging to officers, washing establishment, latrines, drill-shed, &c. These buildings are all arranged around the parade-ground, which, although considerably diminished, will be of sufficient extent for the purposes of the troops. The married soldiers' quarters form two blocks to the south-west. Each man will be provided with a living-room, bedroom, and scullery, measuring 13 ft. by 14 ft., 9 ft. 6 in. by 14 ft., and 6 ft. 6 in. by 14 ft. respectively. The school-room is embraced by the right-side block, and is 19 ft. by 14 ft. (fitted up with a gallery, desks, and the usual scholastic appurtenances), and a class-room measuring 14 ft. by 9 ft. The soldiers' barracks are on the south of the grounds, and are divided into four large rooms, each 79 ft. by 22 ft., bedding and the ordinary requirements being provided for thirty men in each room. On the north are the sergeants' mess-room, reading-room, recreation-room, &c., the two former being 24 ft. by 18 ft., and the latter 28 ft. by 20 ft. The drill-shed, which is near to the sergeants' mess, is 60 ft. by 30 ft. in extent, with an asphalted floor, and an iron roof. The whole of the work is being carried out by Mr. J. Loveday, of Kibworth, the contractor, from plans supervised by the engineers. The buildings are of red bricks, with blue bands at the window heads and sills, and are roofed with blue slate, the copings being of stone. The work of laying the concrete foundations was commenced in the first week of September, 1875, and it is thought the whole will be completed within two months, at a cost of 15,000*l*.

In Bridge-street several improvements have been made. Mr. Henry Mulliner, who intends to transform his present carriage-room into a skating-rink, has entrusted the erection of new premises to Mr. Bonham, of Edith-street, from the plans of Mr. Ingman, architect. Some old cottages which adjoined the manufactory were pulled down, and upon the site a carriage-room, 114 ft. in length, and having a frontage of 40 ft., has been built. The flooring will be of asphalte, and above is a room of similar dimensions, which is intended for a show-room.

PROGRESS OF THE GREAT TAY BRIDGE.

THE stupendous bridge across the Tay which has been in course of construction for more than two years past under the auspices of the North British Railway Company, is making rapid progress, and notwithstanding the exceptional magnitude of the undertaking, and the enormous amount of engineering skill and labour involved, the contractors, Messrs. Hopkins, Gilkes, & Co., of Middlesbrough, express their confident hope that in twelve months from the present time they will be able to run an engine over it. The work has so far proceeded that from the south side to the fifteenth pier the bridge is complete. This fifteenth pier is the first in which the superstructure of iron columns has been substituted for solid brick piers above high water. From the north side the whole bridge is completed as far as the 162 ft. span, which comes between the 145 ft. and the 245 ft. span, the only exception being that the girders of one span, which have been used throughout as a travelling crane, to lift the other girders, are not yet dropped into place, and two of the girders are not yet to the full height. Of the fourteen piers for the thirteen spans of 245 ft., ten are now in the water. Of the ten piers, the majority are complete to the stone coping above high-water level, and two of the piers, with the girders spanning them, are to the full height. Next the largest span, to the south, are five spans of the medium width, all complete and with girders in place. Between these and pier No. 15 is a gap of five spans, the work for which is more or less in a state of forwardness. Of the eighty-five spans in the bridge, seventy-seven piers are in place, there being only eight piers to put down, four of these being of the largest size. Of these seventy-seven spans, above fifty are actually finished, and the majority of the others are well advanced towards completion.

An interesting sight was witnessed at the works the other day. The contractors had invited the Cleveland Institution of Engineers to inspect the bridge, and amongst other things which they saw they were eye-witnesses to the floating of one of the iron caissons or piers for the thirteen spans of 245 ft., which are built on shore on pontoons, and then floated out to their places. These iron caissons are above two hundred tons weight each, and are thus described. They are 31 ft. in diameter and 40 ft. in height,

when floated, though of this height about one half is temporary, and is removed after the permanent portion has been placed. As floated the latter portion has a brick lining of 15 in. The weight is swung on a series of girders, which are borne upon the two pontoons, the catch being by means of four powerful steel pins passed through projecting "links" on the superficies of the caisson. On being sunk upon the river-bed the caisson is made to force its way into the solid bed, by the action of powerful sand-pumps; upon the solid bed formed by this caisson, when filled with cement, the pointed blocks of brickwork are then placed and built up to the necessary level above high water, and on them the cast-iron columns of the superstructure are based.

It may be added that the 245 ft. spans of the bridge are about 90 ft. above water level. Just think what these figures mean!

ASSERTED BAD BUILDING IN HACKNEY.

WE learn from a published correspondence that the editor of the *Hackney Express* is threatened with a prosecution by the builder of some houses in that neighbourhood, in consequence of remarks in reference to them which he allowed a correspondent to make. The writer of the remarks now says,—

"After a repeated examination of these houses, plan, arrangement, workmanship, and materials, I unhesitatingly assert that they are what are known as 'run up' buildings, and are of the 'Jerry' class, and I boldly affirm that no respectable professional architect, of the least standing in his profession, would plan such houses, or pass them as fit and proper ones. I have examined them in carcass and skeleton state, and also in process of completion. Room by room, from ground-floor to roof-tree, I have gone over several of them, and have taken copious notes of the workmanship and material, and I am in possession of sufficient information to qualify me to speak of the exact character of these houses. . . . The design and construction of the houses are utterly bad, and so is a large amount of the materials and workmanship. An examination of the brickwork, mortar, plastering, floor joists, flooring, ceiling joists, rafters, and other timbers, will show their character. The timbers generally are poor and of insufficient strength, and exhibit make-shift construction."

After further description the writer adds in conclusion:—

"If the builders are not satisfied with my description I will return to the subject again, and particularise things, bad, good, and indifferent, more minutely. Before concluding, I would also remark that I found on examination a length of the roadway and footway in front of some of these houses made up of common rubbish and refuse matter. The stuff is what is generally known as 'shoot' material, and,—will it be credited?—I found the kerb-stones along a portion of the footways bedded in with no other than this loose, shifting ash and unsolid stuff. A public journalist is threatened with legal proceedings for telling the above facts and warning the public against living in houses of bad foundations, materials, and ill-construction. I have spoken for the safety of the living on this and on former occasions and perhaps it will not be regretted by the general public if this threatened suit is prosecuted, as a test case may be afforded in which even the Metropolitan Board of Works might take future action. The time has surely come for the smiting down with public indignation and the strong arm of the law the nefarious practices of the tribes of 'jerry' builders 'scamping' builders, and 'speculative' builders, and their aiders and abettors, who have for so many years infested the London metropolis, preying like ghouls upon the vitals of our unsuspecting people."

If the account given be true (we ourselves know nothing of its correctness or incorrectness) it ought to be no crime in a journalist to point the work out for reprobation. It is high time that such a mode of building should be put an end to, and this will best be brought about by the expression of public opinion.

THE PORTSMOUTH DOCKYARD CONNECTING RAILWAY.

THE short line of railway which is to connect the South-Western and Brighton lines, at Portsmouth, with the waterside and the dockyard, is intended to be opened on the 1st of October. The line has been in course of construction for nearly two years, having been commenced at the latter part of 1874. For nearly its whole length it passes over embankments and bridges, and at the waterside it is supported upon iron girders resting upon screw piles. A few days ago the line was inspected by Colonel Hutchinson, of the Board of Trade, previously to the granting of a certificate by the Board for the opening of the line. In order thoroughly to test the iron girders and screw piles, two of the heaviest engines from each company were run along the line, and the deflection of the girders was so slight that the inspection was considered quite satisfactory. Messrs. Saxby & Farmer's block-and-lock signal apparatus, by which the line will be worked, is now in course of erection. It is considered that the new line will be a great convenience to tourists, as it will enable them to embark in Isle of Wight steamers without the intervention of trams and piers. It will also be used by all troops embarking and disembarking. The line has been constructed by Messrs. Aird & Sons, of Lambeth, under the superintendence of Mr. Jacomb, the engineer of the South-Western Company.

PROPOSED FRENCH SOUTH KENSINGTON MUSEUM.

THE Directors of *L'Art* have opened a national subscription "for the foundation and organisation of a South-Kensington Museum,—a Museum of the Decorative Arts," in connexion with *L'Union Centrale des Beaux Arts appliqué à l'Industrie*, and have published some reasons why it should be done, and why the people should do it for themselves. The writers call upon their countrymen to give letters of naturalisation to the English motto, "Self-Help, Self-Respect," and to make the Museum of Decorative Arts the first result of the act. With the fullest recognition of the value of such a movement for France, we are disposed to think that the provision of a museum and establishment of the kind desired is too great a work to be looked for from the infancy of Self-Help, and that the Government should be moved to assist it. The advertised amount subscribed up to the present time is 180*l*.

THE PARIS INTERNATIONAL EXHIBITION OF 1878.

WE publish this week a reduced copy of the official plan of the Universal Exhibition of 1878, so far as the Champ de Mars is concerned. We have already, more or less, described the arrangements which occupy the enormous space of 240,000 square mètres, one half of which will be devoted to France and her dependencies, and the other to the foreign countries.

Although the English journals appear to have said very little on the subject, the authorities here, relying upon England and Germany being the largest contributors to the foreign section, have allotted to them the two façades respectively facing the Seine and the École Polytechnique, that facing the Seine being devoted to England.

The *Journal Officiel* has just published the decree of the Marshal President, instituting the Universal Exhibition of 1878, together with the general regulations and classification, comprising an immense mass of clauses and details, the most important of which we will here publish, or have already done so. We are told that an official notice will shortly be given in England regarding this Exhibition, by which the attention of all intending exhibitors will be called to the subject.

Manufacturers exhibiting abroad, having so often suffered from the inconvenience connected with the Custom House, will be glad to hear that the rate of duties will be accommodated on the easiest possible terms; no object being liable to duty on entering the Exhibition, and alone subject to a small tax in the event of the object being purchased and remaining in France. Much of the usual officialism (it is said) is to be relaxed, and every consideration will be given to the convenience of the exhibitors.

The system of general classification, to which we have referred above, comprises nine groups divided into ninety classes:—

The first group,—*Works of Art*,—includes five classes:—

Oil paintings; different paintings and drawings; sculpture and medal engraving; designs and architectural models; engravings and lithography.

The second group,—*Education and Instruction*,—includes eleven classes:—

Education of the infant—primary instruction; organisation and materials for secondary instruction; organisation, methods, and materials for superior instruction; printing and stationery; book-binding, materials for painting and drawing; ordinary application of the arts of drawing and plastic art; photographic proofs and apparatus; musical instruments; medicine, hygiene, and public assistance; mathematical instruments; maps and apparatus of geography and cosmography.

Third group,—*Furniture and its Accessories*:—

Decorative and cheap furniture; upholsterers' and decorators' work; crystal, glass-work, and stained windows; pottery; carpets, hangings, and other furnishing textures; wall-papers; cutlery; goldsmiths' work; bronzes, metal casts, and works *repoussé*; watch and clock making; apparatus and processes of heating and lighting; perfumery.

Fourth group,—*Tissues, Clothing, and their Accessories*:—

Thread and cotton tissues; thread and tissues of hemp and flax, &c.; thread and tissues of combed wool; thread and tissues of carded wool; silk, and tissues of silk; shawls; lace, tulle, embroidery, and fringes; bonnets and linen objects accessories to the clothing; clothing of both sexes; jewelry; portative arms, for the chase, &c.; travelling and camping objects; toys.

Fifth group,—*Raw and worked-up Products of the Extractive Industries*,—seven classes:—

Mining and products of metallurgy; products of the forester's industry; products of the chase, engines, &c., instruments for fishing and harvesting; agricultural products not alimentary; chemical and pharmaceutical products; chemical processes of bleaching, dyeing, printing, and preparing; skins and leather.

Sixth group,—*Tools and Processes of Mechanical Industries*,—nineteen classes:—

Materials and processes of mining and metallurgy; materials and processes of rural and foresters' industries; materials and processes of agricultural manufactories, and their elementary industries; materials and processes of tanning; machines generally; tools; materials and processes of spinning and rope-making; materials and processes of weaving; materials and processes of cutting and making of clothes; materials and processes of the manufacture of objects of furniture and the household; materials and processes of paper-making, dyeing, and printing; machines, instruments, and processes, used in different branches of trade; carriage and cart building; saddlery and harness-making; railway stock; materials and processes of telegraphy; materials and processes of civil engineering, public works, and architecture; materials of navigation and life-saving; materials and processes of military art.

Seventh group,—*Alimentary Products*,—seven classes:—

Cereals, farinaceous products with their derivatives; products of baking; fat alimentary bodies; meats and fish; vegetables and fruit; condiments and stimulants sugars and their products; fermented drinks.

Eighth group,—*Agriculture*,—nine classes:—

Specimens of rural industries and agricultural manufactures; horses, asses, mules, &c.; oxen, buffaloes, &c.; sheep, goats, pigs, rabbits, &c.; poultry; dogs; useful insects; fish, crustacea and molluscs.

Ninth group,—*Horticulture*,—six classes:—

Hothouses and horticultural materials; flowers and ornamental plants; kitchen-garden plants; fruits and fruit-trees; grains and plants of wild origin; hothouse plants.

The actual progress in the work on the Champ de Mars consists of a low trelliswork, marking the limits of the future Exhibition, and the labour of a few workmen who have been, for some few days, searching for the drains of the Exhibition of 1867.

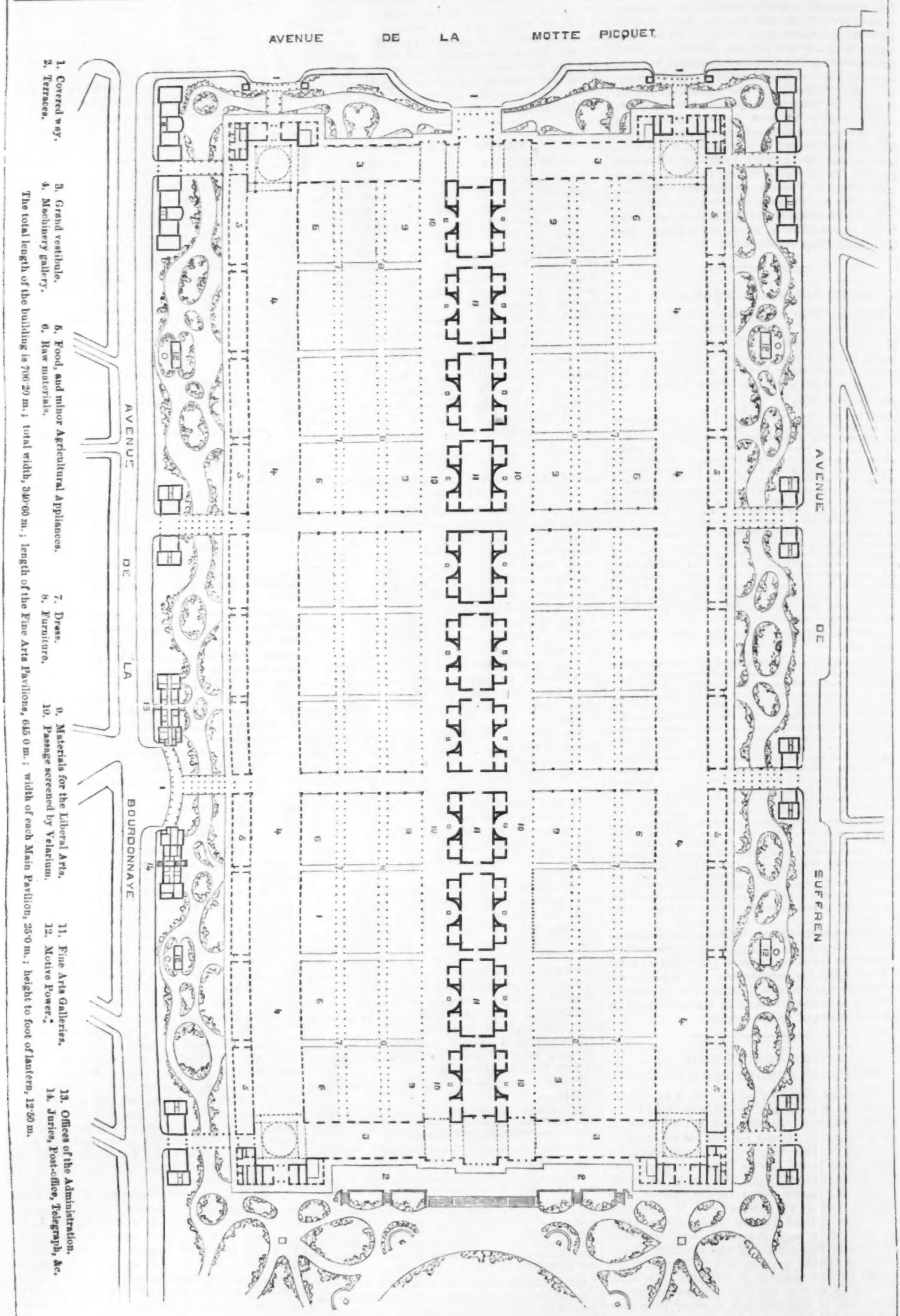
The facts that have led to the controversy that has lately arisen on the relative merits of English and American manufactures must have been a surprise in many an English "Sleepy Hollow"; and if the indifference to exhibit the products of our factories at Philadelphia should be repeated when the time comes for exhibiting in Paris, the friends and admirers of American skill are likely to have great additional reasons for jubilation; and if there is any probability of the same apathy on the part of the English manufacturing capitalists within the next eighteen months, the repeated blow in 1878 is likely to be no slight one.

If it be the case, and doubtless it is, that America's rapidly-increasing capital and energy, of which we hear so much, succeed in alluring from other countries skilled workmen and accomplished artists to aid her in her competitive aspirations, England will be put even at a greater disadvantage, as our own skilled workmen are not so numerous, and our accomplished artists so easily obtained, as to make our manufacturers altogether independent of foreign aid.

The high standard of intelligence that the education of America affords to the class of men who are occupied in mechanical or other manufacturing pursuits allows them to regard utterly without prejudice, and to avail themselves without question, of the accumulated intelligence and skill of any part of the world where what the Americans require is to be found, and they readily give up their own deficient hand where they find another obedient to the mind which is so often superior to the power of production.

There must be few branches of profitable manufacture that in course of time America will not excel in. We hear a good deal of their silks and woollens being equal to our own. They will of course depend on French artists for all that they do. It is said that French workmen in whatever branch lose their acute artistic perception in England after a very few months' practice in our climate; they perhaps may find America, its ways, its people, and its rewards, more agreeable to their tastes.

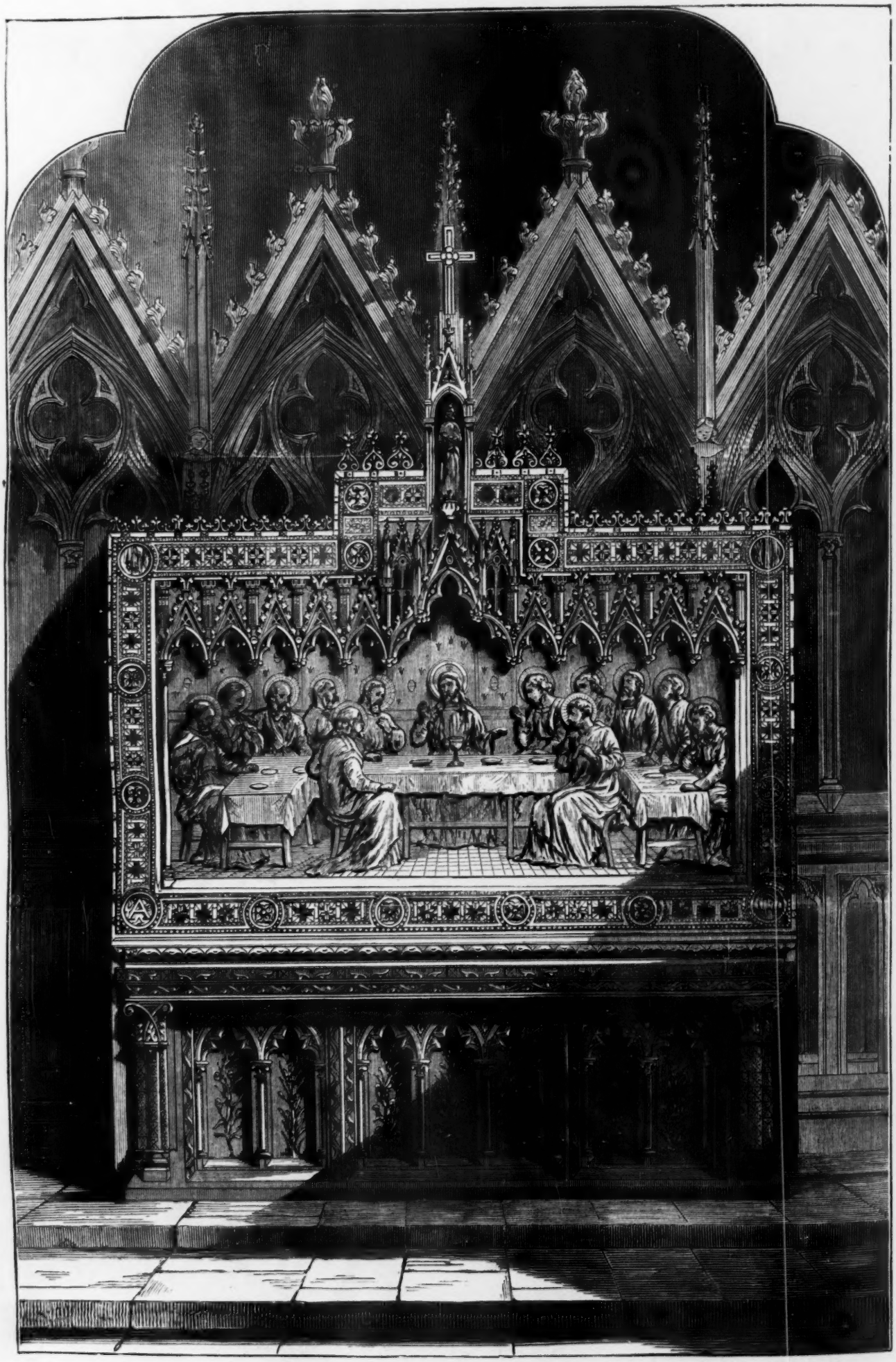
The Americans at least intend to make a great effort for the Paris Exhibition of 1878, and they will come before the world with the advantage proverbially attached to an agreeable surprise.



1. Covered way.
2. Terraces.
3. Grand vestibule.
4. Machinery gallery.
5. Food, and minor Agricultural Appliances.
6. Raw materials.
7. Dress.
8. Furniture.
9. Materials for the Liberal Arts.
10. Passage screened by Velarium.
11. Fine Arts Galleries.
12. Motive Power.
13. Offices of the Administration.
14. Juries, Post-office, Telegraph, &c.

The total length of the building is 706·20 m.; total width, 340·60 m.; length of the Fine Arts Pavilions, 645·0 m.; width of each Main Pavilion, 250 m.; height to foot of lantern, 12·50 m.

PLAN OF THE PARIS UNIVERSAL EXHIBITION FOR 1878. THE CHAMP-DE-MARS PORTION.
ARCHITECT, M. HARDY; ENGINEER-IN-CHIEF, M. DUVAL.



THE NEW REREDOS, CHESTER CATHEDRAL. [See p. 896, *ante*.

THE "CANTERBURY," WESTMINSTER BRIDGE ROAD.—THE LATE MR. ALBERT BRIDGMAN, ARCHITECT.

THE "CANTERBURY."

WE give in our present number a view of the principal entrance to the "Canterbury," rebuilt for Mr. R. E. Villiers, from the designs of the late Mr. Albert Bridgman, architect, whose lamented death at the early age of thirty-five years, and at the most eventful period of his brief professional career, we announced at the beginning of the present year.

All those who remember the Canterbury Hall of former years, and they are probably many, will doubtless be surprised at the transformation since their last visit. The new building will be opened to the public on the date of our present issue. The "Canterbury," which covers an area of 27,000 superficial feet, or about two-thirds of an acre, will be an attractive place of entertainment.

The principal entrance is from the Westminster Bridge-road, in close proximity to the South-Western Railway, and opposite the Lambeth Baths, two houses next Carlisle-street having been purchased and removed for this purpose. The façade is of stone, of 35 ft. frontage, and four stories in height, profusely sculptured, and surmounted by a lofty curb roof decorated with metal work. The top story comprises one large circular window, designed for the purpose of displaying revolving scenes, and the announcements of the "Canterbury."

The floor of the arcaded entrance is paved with tiles, and leads, past the pay-offices, first into an aquarium, which is a spacious and handsome compartment, surrounded with fish-tanks, already supplied with interesting specimens. The tanks are well lighted, and have a constant air and water supply.

Passing from the aquarium through a loggia,—from which are approached, by means of a spacious flight of stone steps, the billiard-rooms, arranged on the first floor of this part of the building, together with the various management offices,—we enter the fernery, this portion of the building being covered with a glass roof. Here a picturesque sight greets the eye,—drooping ferns in nooks of rockwork and rippling streams line the footway on either side, whilst the walls, for a height of some 10 ft., consist of silvered glass, reflecting a scene yet unreached,—the cave fernery, with varied plants. The pendent rocks and stalactites above, and the cooling streams beneath; the staircase, balcony, and promenade in the distance; together with the chief entrance to the great hall—all combine to form a striking scene of its kind. A turn to the left on passing through the cave reveals an arcaded vista of considerable distance, with water, rock, and fern. Leaving the staircase, we approach the entrance to the fauteuils, a distance of 200 ft. from the Westminster Bridge-road. We are now within the hall. This is 100 ft. in length from the orchestra to the back wall, and is 70 ft. wide. The balcony, supported on iron columns, is 13 ft. from the floor, having a double curve at the springing of the horse-shoe. 12 ft. above this is the gallery-floor, with a curved front similar to the balcony below, but set back 2 ft. Springing from the top of the second tier of columns, which are 15 ft. apart, is a series of vaulted arches encircling the building, and curved towards its centre to a height of 12 ft., leaving a complete oval. From this height springs a second hollow curve to a further height of 9 ft., leaving an oval opening to the sky of 40 ft. by 20 ft., to cover which is provided a semicircular iron and glass dome, at a height of 60 ft. from the floor, capable of being opened or closed in twenty seconds. This dome is of considerable weight, and rolls by means of simple machinery on two iron girders placed longitudinally, which in turn rest upon two lattice girders, 4 ft. 6 in. deep, the whole width of the building and clear above the roof: the arrangement is patented. The upper cove of the roof is painted to imitate sky, with a bottom border of trellis-work interweaved with flowers and ferns. The spandrels of the vaults and arches beneath are decorated in colour and gold. From the springing of the vaults are groups of palms and ferns, spreading and filling the spandrels. The upper half of the columns throughout are decorated to form palm-trees, the caps being of spreading and drooping leaves; from which spring five pendants for gas to each column. The balcony and gallery fronts are of bold ogee shape, with large hollow mould at bottom, and are ornamented in carton-pierre of different patterns, with a basket of flowers and ferns every 10 ft. apart. The decorations of the proscenium front are of the same character,—palm-trees and leaves, profuse in colour and embellished with gold. The oval central light contains a ring of gas-jets, 9 in. apart, to each of which is fixed a thirteen-star light, each 4 in. in diameter.

The stage is 70 ft. by 30 ft., and the proscenium 40 ft. by 40 ft. Communicating with the hall is the lounge and picture-gallery, 70 ft. by 24 ft., fitted for refreshment accommodation. The counter fronts are of polished ebony, and the tops of the counters and tables of Mexican onyx. This apartment is also decorated and is lighted with three sunlights and three wrought brass standards on the counters.

The balcony is approached by the main stairs through the fernery. The gallery entrances, however, are in Upper Marsh (the original main entrance to the "Old Canterbury"); the approaches are by means of double staircases, of fireproof materials, to prevent crush, and have separate means of exit. There is also a distinct "pass" stair, in stone, from the gallery to the balcony floors. The professionals engaged also enter from Upper Marsh, there being commodious dressing and retiring rooms for them on the first, second, and third floors, having direct communication with the stage.

The ground-floor rises from the orchestra backwards at the rate of 1 ft. in 4 ft., which, whilst it gives a good view of the stage, admits of spacious cellarage underneath over the whole area, which communicates with that under the lounge, and has convenient access from Upper Marsh.

The contractors for the hall were Messrs. Bracher & Son, the Westminster Bridge-road building and aquarium being previously built. Mr. W. Bradwell has executed the carton-pierre work and other decorations; Mr. Somerville constructed the sliding roof-light; Mr. Cannon, the gasfittings; and Mr. Radclyffe, of Holborn, the rockwork and gardening. Mr. H. Taylor has been the general foreman of the works; the whole of which, when completed, will have cost nearly 40,000*l*.

Mr. H. H. Bridgman succeeded his brother as architect, and under his superintendence, in conjunction with Mr. Chas. Dunch, the works have been carried out, with the aid at all times of the enterprising proprietor.

YORKSHIRE ARCHÆOLOGICAL ASSOCIATION.

HALIFAX PARISH CHURCH.

THE tenth annual excursion of the Yorkshire Archæological and Topographical Association took place, as already mentioned, on the 30th ult., Halifax being the *locale*. After morning service at the parish church, the members were welcomed by the vicar, the Rev. F. Pigou, who said that it was his earnest hope that the time was not far off when they would—not only in Halifax, but in Yorkshire—rejoice in seeing that parish church, of such noble proportions and splendid capabilities, "re-arranged" as some, "restored" as others, would say—preserving all the original design, which it would be sheer wantonness to efface—by entrusting the work to one whose accurate and scientific knowledge would at once enable him to discern between what really belonged to the past, and was, therefore, worth preserving, and what was of modern innovation, and not worth preserving. He desired to see the time when by opening the whole church, pulling down the galleries, and placing the pulpit in a better position, the church would be better fitted for its purpose. He yielded to no one in a real love of antiquity, but he would rejoice if the visit of the Association should lend a stimulus to the restoration of that church. He had already had a generous offer from an individual towards that object.

Col. Akroyd, acknowledging the welcome, said he believed it was his distinction to be the first to commence, along with his wife, the work of the restoration of that church by the insertion of the east window; but he must give his opinion that the baring of the rubble walls was an exhibition of bad taste, inasmuch as the more correct taste would be displayed by plastering them up again. Some years ago, when Sir Gilbert Scott spoke to the late Archdeacon Musgrave about the restoration of the church, the reply was, "Let it be; it will last my time."

Mr. Fairless Barber then read an elaborate paper descriptive of the church, in the course of which he said,—Externally the distinct character of these additions is very clearly seen, and is specially marked in the buttresses of the parapet, which, commencing on the newer work, has been continued over the earlier chancel. The moulding under the parapet will be found decorated with little shields and other devices. Taking the architecture alone, we shall at once conclude that the whole is work well within the fifteenth century; that none of it is earlier than 1400, or later than 1500; and but for the points I have mentioned, it would have been difficult to say from the architecture alone in what order of date the different parts of the church can have been built. The following extract from an original MS. is referred to by both Wright and Watson in their histories, as the best information that can be obtained as to the precise date we require.

"In the time of John Waterhouse, of Halifax, deceased, who died about Candlemas 24 years since (*i.e.*, 1540), at his death being near 100 years of age, I trowe three years under, and when he was a child about six or seven years of age, was the church of Halifax began to be builded, and he and many more children stood upon the first stone of the steeple. It was twenty years in building. By this it appeareth that John Waterhouse, of Halifax, was born in 1443, and in 1657, it is 207 years since the foundation of Halifax Church was laid."

This would give 1450 as the date when this centenarian played as an infant on the foundation of the tower, and if the change from the church in its second state to what we now see was at that time taking place, he might well think the whole fabric was being built afresh. The tower indeed may have been commenced before the additions at the east end, which are attributed on the strength of an inscription upon his arms in the roof, to the vicariate of Thos. Wilkinson (1439-1481), who is said to have built the great east window, finished in 1480. The recent stripping of the walls and arches had revealed another class of evidence bearing on the question, viz., the masons' marks, a schedule of which had been carefully prepared by Mr. E. Walker, in a form which would enable any one to verify the results for himself. The occurrence of the same marks in the church in its second state and not elsewhere confirmed the view that it was a separate work, and the like occurrence of different marks in the three eastern bays only, supported the same conclusion as to that part. The testamentary records of the period supply another source of information; these have been carefully examined by Mr. Walker, from 1398 to 1550. Within this period he has met with about 150 testamentary burials, but the allusions to the fabric are but scanty. In 1454, W. Halifax, of Nottingham, bequeaths vestments. 1459, John Savile, of Copley, gives 1*l.* to the tower, and 6*s.* 8*d.* for the bells. 1457, William Lyttster, of Halifax, draper (whose daughter married a Savile), bequeaths fabrice campanilis ejusdem ecclesiæ vjs. viijd. quolibet anno solvendo post decessum meum quousque fabrica dicti campanilis ædificetur et finiatur. According to Wright's History the 7th bell, recast in 1639, had previously been cast by Thomas Fourness, in 1472, thus confirming John Waterhouse's testimony that in 1450 he played on the foundation of the steeple, and that it was twenty years in building. In 1502, John Deyn gives 20*s.* for organs. From this we may gather that there was some church requiring vestments in 1454, probably the church in its second state then completed; that a tower was then building, and subsequently in 1472 completed; and that some time before 1481, when Thomas Wilkinson died, the rest of the completed fabric was built.

Of the Rokeby chapel, it was built in pursuance of the will of Wm. Rokeby, who was archbishop of Dublin and vicar of Halifax. This will, extracts from which are given by Watson, directs that his body is to be disembowelled, his bowels and heart buried in the quire at Halifax, his body in the new chapel at Sandal. That a chapel be made with all convenient haste, on the north side, and a tomb with his image, and thereupon written, "Hic jacet Willelmus Rokebey nuper Dublinensis Archiepiscopus et Vicarius perpetuus istius Ecclesiæ."

Of the Holdsworth chapel, the date 1554, inscribed on the authority of a statement on the monument in the chapel, still remaining, must be corrected. The date also of his vicariate has been more nearly ascertained, for he is described as vicar in the will of James Lister, in 1524, of which will he was executor. And one William Palden, of Halifax, clerk, in 1535, by his will, directed that his body should be buried in the chapel recently erected by Vicar Holdsworth. It is larger than the Rokeby Chapel, and in order to give it a roof continuous with the south aisle, the three arches, by which it is separated from the nave, are somewhat higher, and the general arrangement has rendered

necessary the raising of that roof to its present position. The additional lights on the line of the roof and west of the porch have at this time been added.

Mr. Barker then briefly alluded to the historical evidences of the dates of the church; to the grant of Halifax church by Wm. Earl Warren, which Dugdale attributed to the first, Watson to the second, and Hunter showed to be the grant of the third Earl Warren; to the unworthy character of the early rectors appointed by the Priory of Lewes, as stated by the Archbishop of York, who procured the formation of the vicariate of Halifax in 1273; to the coincident evidence that, when this state of things was amended, a church was erected of which a portion still existed in the north wall; and to the fact that the existing church, both as to the second and the completed church, were coincident with the vicariate of natives of Halifax, a coincidence on which, he said, Halifax had reason to be proud; and then passed from the fabric to its furniture and contents. The font, with its magnificent cover, first claims attention. This is evidently of the period of the completed church. The cover, which is 13 ft. high, is as rich an example of carving as can well be found anywhere of the Perpendicular period. It has not been preserved without some vicissitudes, for we learn from Mr. Brearcliffe's MS., exhibited in the Halifax museum, that,—

"1645, 3 Ap., 1,000 Scots came out of Cheshire to Halifax, and stayed to 23rd April."

And this further:—

"Ye Scots caused ye font to be taken downe in Halifax Church, which stood at ye lower end, which stood near the bellhouse, just in the middle of the upper walk side of ye east side of our church." "Ye font head is in Chr. Hartley's parlour, and was taken out of ye church by Will. Schofield, churchwarden, in 1650."

The accounts for 1648 contain the item, "A basin to hold water to baptiz childre, 2s. 10d.," this was the substitute at that period for the font which had been removed. A subsequent register has the entry, "In the year 1660—was our ould font re-erected."

In 1693 the churchwardens paid "for takeing downe the ffont, beautifying and mending it, and setting it up againe, 6l. 5s." The churchwardens' accounts for 1728 tell of expenses in taking down and mending the font and the chain, and also

"To Jo Aked, for gilding the font, 2 dials, cleaning Moses and Aaron, the Creed and Lord's Prayer, as per note, 8l. 5s."

That there was a rood-screen in the church in its second state is probable, but all trace of its existence would be lost in the alterations made in the piers of the chancel arch. In the completed fabric the rood-screen occupied the site of the present chancel-screen, within which considerable portions of its framework are concealed. At the north side, mortises, with the ends of the supports of the platform or staging of the loft still pegged in, can be seen. The beams have been richly carved, and the mere remnants, out of which the present screens have been made up, indicate a work little, if at all, inferior to the font in execution. Above it was a crucifix, before which, in the middle alley, Thomas Northend, in 1533, directed his body to be buried. There was a rood service and a perpetual stipend or service at the rood-altar, to which he would presently allude, but of this altar no trace remains.

Shorn, as we have seen, of its loft, this screen was destined to receive in succession the king's arms, the State's arms, and the royal arms again. This we find proved by the accounts of James Hodgson and Abraham Wood, churchwardens A.D. 1652 (John Brearcliffe being overseer, and writing the entries):—

Item to Thos. Wray, joyner, to make a frame for ye State Arms, and new Crest making for quire	00	10	8
It. for p-inting State arms at York 21s. 6d., for carrig. of ye fram from York to and fro, 6s.	01	07	6
It. for 2 crooked legd irons & staple for ye Arms to stand upon	00	06	2
It. for mortices for State Arms to stand on 4d., ale 6d., a ladr removeing 1d.	00	00	11
It: to go to Coley and Lightcliff to view how ye State Arms was painted there, spent	00	00	6
It: to bring King's Arms from W Scolfield to Library	00	00	4

The king's arms had probably been set up in 1606, when, according to the churchwardens' accounts, 1l. 18s. 4d. was paid for the frame over the quire; and in 1636, when, as we shall see, great alterations were made in the church, there was a payment for boards for the king's arms. These, no doubt, would be again set up on the restoration, and in 1663 4l. were paid for gilding and beautifying them. These, then, remained until the very beautiful royal arms of Queen Anne, carved to face both ways, and now fixed under the tower arch, were put up to replace them;* they in turn being removed to their present place on the erection of the present painted east window a few years ago. The existing somewhat pretentious and most unpleasing chancel screen is quite modern.

Mr. Barber, next referring to the full copy of the chantry returns which he had received from the office in London (but to which there was not time to make more than general allusion), explained that separate chantries did not involve separate altars.

The earliest chantry in the church is Wilby's. The Wilby family were of Priestley, in Hipperholme, and the founder was John Willebye, and the date of his foundation 1494. Brigg's chantry was founded (says the chantry return) Oct. 10th, 16th Henry VIII, A.D. 1524, though the Harleian MS. says 24th Henry VIII., A.D. 1532.

There was also a lady altar. John Milner in 1526 gave 5s. "to byeing a masse boke to our ladie altar in Halifax churche." The same year Ric. Ambler gave 20s. from land at Farsley "to the maynteynying of the service of Almyghtie God in the parish churche of Halifax before our ladie, saucte George, and to the morne preist to be divided among these by equall porcon." This seems to connect the three with one altar. Two chantries are named by the commissioners, which are not assigned to any particular altar,—Hunter's chantry and the Firth chantry.

Connected closely with the screen are the chancel stalls; these you will find in their present form to be mere patchwork, in which three sets of three each, of stalls of earlier work (the misericordes in which remain and are described in the programme), have been extended by very inferior work, which contrasts strongly with the beautiful carving of the earlier work. The details of this better work correspond with the work in the roof of the north aisle, and it seems safe to attribute them to the church in its second state. You will find the pelican, the wild man, and the mermaid well preserved, and admirable specimens of fifteenth-century carving.

The first mention of a pulpit is in 1596, when 2l. 5s. 2d. were paid for making a pulpit. An old pulpit, probably an older one which the 1596 pulpit had replaced, was sold in 1621 to Gregory Patchett, churchwarden of Coley, for 6s. 8d. On this, Oliver Heywood notes:—

"While Mr. Denton was curate of Coley, that chapel was enlarged and pewed, and the pulpit brought from Halifax, being an old pulpit opposite to that which now stands in the church; for as this stands on the south side, so that removed stood north, facing the south at the other great pillar."

Mr. Barber then spoke of the seating, which is a very interesting feature of this church. The stalls or seats, for the term is used interchangeably, present an arrangement which it is clear must have existed during the early part of the sixteenth century, and which may have originated at the completion of the church, in 1481. For we find a "rowme in the 26th stall in the south of the midst alley," bequeathed by William Holmes, of Halifax, to Richard Brighouse, of Hipperholme, in 1538. Edward Waterhouse, also of Skircoat, in 1543, bequeathed to his son "one seitt in the saide parish church." And in 1542 and in later years we meet with several instances of testators desiring specially to be buried near their seat or forme in the church.

The following licence to erect a pew in 1606 (from Mr. Lister's collections), shows how faculties were then dispensed with:—

"Whereas there ys a vacant place in the lower p't of the north quear of Halyfax Church, and that Wyllm Holdsworth of Southowram ys destitute of a convenient place for hering ye dyvyne seruice and —— of God in the said church we churchwardens here subscribed do lycence the Wyllm to make a Seat or forme in the said vacant place for the intent aforesaid, hopinge Mr. Doctor wyle agree and cocent thereunto. In wytnesse whereof we have subscribed our names the day and yeare aforesaid.

Jo. Favour.

Samuel Mitchell.	James Murgatroyd.
John Clough.	George Banister.
Henry Best.	John Brooksbanke.
Richard Gibson.	Michaell Slater.
	Richard Brodley."

Considerable sums were spent in the church early in the seventeenth century, which may have had reference to the seats. Thus, in 1606 the wardens paid

"for 17 trees to Sir George Savile besyde 2 wh hee gave	10	00	10
for posting slitting and sawinge	8	3	4
for sawing and heaweinge 4 roods of bords and 74 jobbyes	3	15	6
for f-lling 19 trees	0	9	6"

* These were the work of John Aked, who appears to have been connected with much of the later work at the commencement of the eighteenth century.

About this time also we find references to lofts. John Waterhouse, of Cross Hill, Halifax, yeoman, by his will, dated 1606, proved 1610, left 20s. for and towards the making of a scaffold or loft within the said parish church of Halifax. In 1621 also there is an entry for making a loft for the churchwardens. This must have been at the west end, for amongst other work done that year was the making of two pairs of stone stairs into the loft, and "paid a joiner for post and two rails for stairs behind the great church door." These scattered entries bring us to the time 1633-5, when the church was seated in the characteristic and unique manner still preserved. The entries in the accounts are supplemented by a statement in John Brearcliffe's own handwriting, which bears both on this and on the earlier seating.

"This year, 1634, the present church wardens took all ye old church stalls downe and erected them new and tooke or gained so much space of ground (viz.) made ye former 6 seates from ye pulpit towards ye quire into 7 formes or seates. So yt now ye stall or seat adjoyning next unto ye pulpit is employed and made use of for ye clarke to sit in and so continued to this day."

[Mr. E. J. Walker here added the additional information that, in 1802, the churchwardens purchased this clerk's seat for 6l. 6s. to add the still existing stairs leading to the pulpit.]

"And likewise they tooke and gained more space of ground on the north side in the middle p't of ye church wich lyeth opposite to the little pillar next to ye great pillar over against ye pulpitt towards ye bell house being ye stall or seat counting downwards from the stall joyning to ye great pillar."

Adverting to the roof, which is a special peculiarity of the church, with its arms of the vicars in the nave, and of laymen in the chancel, the following particulars are given in the various churchwardens' accounts. The great use of gilding and of gold stars in the church, seem to forbid the idea that the arms were then painted; and the accounts of painting the panels [? repainting] accounted for nearly the whole of the panels in the nave:—

1636.	Ite for makeing a scaffould for the paynter	00	02	06
	Ite for 29 bookes of leafe gould	04	07	00
	Ite payd to William Slater for his worke done in the chancell	08	10	00
	Ite for fower hundered & odd Stars for the Chancell	01	02	04
	Ite to Christp Robinson for seeleing and for the frames for the tenn commandments and for borders for the Kings armes	04	12	02
1663.	To John Wilson for guilding & beautyfying the Kings arms	4	0	0
1696.	Pd John Shepard for 4 pannells over the ffont and mending the ffont	00	19	06
	To James Hoile for painting Eight Pannells over ye ffront & for wainscot painting	03	10	00
1699.	pd for four Pannells to put over the ffont	01	16	00
	pd for painting the Pannells and a new door	01	06	0
1700.	pd for 4 Pannelles and putting them up in the Church	03	01	11
1701.	pd for 13 men cleaning ye Church when ye Old Pannells was pulled down	0	9	9
	August pd John Aked for painting ye 4 pannells	—	16	—
1702.	To John Aked for 4 Pannells and putting them up	03	0	0
1703.	pd for 4 Pannells to John Aked	03	5	0
	pd for staye of wood to secure the rest and fastening them	00	13	0
1706.	pd Fran: Bentley for 45 books of gold 2/6	05	12	0
	pd to John Aykill [Hallifax for John Aked]	07	19	6
1716.	Pd Tho: Dikinson for pointing the Thatch over the Coats of Arms 20s, for sand 1s	01	01	0

The altar-rails, which were curious in structure, were accounted for at these periods:—

1671.	Paid for new banisters in the quier	1	10	0
1693.	Paid for twisting the banisters, &c.	3	2	8
	" for paving within the said banisters	4	2	0
	Paid for chimney erecting	6	10	9
	Paid for carrying and re-carrying the Commandments	0	1	6
1702.	Paid John Aked, for banisters in quire	7	0	0

In 1716, there was an entry for taking the tapestry down, and nailing it up. In 1748, Sowerby objected to a proposal to substitute wainscot for tapestry. In 1767, there were paid "expences of the altar-piece, 20l."

The registers are probably the most perfect and the best-preserved in any parish church. They commence in 1538 (the very year of the injunction by Thomas, Lord Cromwell Earl of Essex), and it is noticeable that the first volume is on paper, and was not copied upon parchment, as was ordered in 1603. It existed in three separate books until 1652, when John Brearcliffe, a local antiquary, came into office, when he had it bound in one volume as it now is.

Mr. Barber, in conclusion, expressed his hope that the fine wood carvings which he had shown existed in part of the present galleries would be preserved, and that the whole church would be

carefully restored, and thrown open from end to end. He said it was not correct to say that no trace of the Norman church, given by Earl Warren, existed, for there was an incised stone built above the chancel arch, and some other stones bearing chevron marks in a window in the north wall; but these were of a very fragmentary character. Referring to the pewing and galleries, he observed that no doubt the early date of this extensive pewing of the church was the result of the Halifax Exercises, which Oliver Heywood says were "famous, and were maintained for thirty years together or upwards at Halifax, whereat not only neighbour ministers preached in their turns, but strangers far and near were sent for to preach; two sermons a day, being the last Wednesday in the month. Multitudes of hearers."

Mr. F. A. Leyland inquired on what authority Mr. Barber stated that the church given to the Priory of Lewes was a Norman church?

Mr. Barber.—It was given in the Norman period.

Mr. Leyland said he had had the honour of reading a paper on the fabric of that church, which was published in the Journal of the British Archæological Association, and he must mention also that in connexion with them he had prepared a ground-plan like the one in the programme of that day. So well did he know the architectural history of that church that he felt bound, whilst acknowledging the general excellence of the paper, to say that it contained many inaccuracies. The length and breadth of the church of 1250 were well known; but he should like to ask Mr. Barber what the age of the north wall was?

Mr. Barber said he was sure it would be satisfactory to the members of the society that a separate investigation, wholly independent of Mr. Leyland, should have arrived at the same results in regard to the plan; but as to the north wall, he must say with some confidence that it was of the same date as the windows, viz., late thirteenth-century work.

The Vicar here suggested that such a discussion ought to take place elsewhere than in God's house.

This put an end to the discussion, and the company proceeded in wagonnettes, to Shibden Hall, where they were received by Mr. John Lister, who kindly permitted a thorough examination of the ancient edifice, and of the old timber-built house, removed by him from Cripplegate, and re-erected near the lake, in his park.

Mr. Lister, after a short account and description of Shibden Hall, read a paper on "The Owners of Shibden Hall."

Returning to Halifax, luncheon was provided at the Assembly-rooms.

After a visit to the Museum of the Halifax Literary and Philosophical Society, where there was a special exhibition of drawings and views of old Halifax, including a series of the arms of Halifax families, sent by Mr. F. Sowerby; water-colour drawings of old houses in the parish by Mr. Sykes, lent by Mr. J. W. Davis; all the histories of Halifax, Nathaniel Waterhouse's original will, Brearcliffe's MSS.; Watson's "collections for Halifax," lent by Col. Akroyd; some old unpublished conveyances of property in Halifax, from A.D. 1255 to 1401, sent by Mr. E. J. Walker; a die used by Halifax coiners, lent by Mr. Walsh; photographs of old Halifax poets by Mr. E. Gledhill, &c., the excursionists proceeded by train to inspect

The Church of St. Mary at Elland.—The Rev. F. Musson, rector of Elland, welcomed the visitors, remarking that if in the restoration of the window they did wrong, they sinned with the very best intention of doing right.

Colonel Akroyd briefly acknowledged the welcome, and Mr. Barber gave a few particulars of the church.

Mr. J. Fowler, F.S.A., read an interesting paper on the east window of the church. In the course of the paper, Mr. Fowler said:—"Whilst admiring beyond measure the generous enthusiasm which has, in the popular sense of the words, 'beautifully restored' the east window of this church, I feel found in truth and sincerity to say that that process—which has rendered it more trim and sightly in the eyes of the majority of persons—has rendered it comparatively useless to the student of history, of art, or of our national antiquities. It is as though you had had an autograph letter of Shakspeare, for many a year laid by or throwing about, without any one to take any care or notice of it, with great pieces torn out of it, defaced, with many words and even sentences or paragraphs altogether missing, and with the ink faded and paper yellowed by age, and crumpled, and dog-eared. At last, in the midst of the great 'Shakspeare revival,' when every one's thoughts are directed to the subject, the handwriting is recognised; the letter is thought 'really worth restoring'; and you send it to some manufacturing stationer, who sets one of his workmen to write over again for you, in a beautiful copperplate hand, the parts where the ink has faded, and supply, at his dictation, what he fancies may possibly have been the missing sentences. Meanwhile another is set to work to clean and straighten the paper for you; whilst the master himself cuts the letter to pieces with a pair of scissors, separates the sentences and paragraphs, and—without any reference to sense or meaning,—transposes them so as to make the old and new writing mix up nicely and not too violently contrast with one another. The letter is then sent home, and vast numbers come to see it and are delighted with it; but the scholar turns from what you have done with horror—regarding it as little less than sacrilege. In his eye you have spoilt the letter, and it is with pain and grief that he mournfully deciphers here and there a word of the original, and laboriously makes out the sense. What would he not give to have back again the letter in its un—'restored' state,—so cruelly torn and spoiled, and yet as far as it went—the genuine, untampered with, true and original letter—paper and ink—SHAKSPEARE! In a like predicament, with such difficulty as may be, I will endeavour to discover the original plan of this window, and point out what is old and to be trusted, and what new. The date of the glass is late fifteenth century. The window consists of five lights without tracery; the second and fourth—which contain each four panels and a canopy-head, being higher than the first and fifth—which contain each four panels only, and the third or central, the highest—containing five panels;—twenty-one panels or pictures therefore in all. The subject of the window, in its perfect state, was the life of the Blessed Virgin Mary, as related in Holy Scripture, the at that time scarcely less venerated 'Gospel of the Nativity of St. Mary,' the *Legenda Aurea*, the *Speculum Historiale* of Vincent of Beauvais, and other less known writings. . . . I must repeat, in conclusion, my extreme regret that a work of such grandeur of conception should ever have been 'restored.' The panels, however broken and imperfect, but still untampered with, would have told us far more than we can ever now learn from the new work, supplied, as has been obvious as we have proceeded, without either knowledge of or sympathy with what the window in its original state was intended to represent. The present order in which even what is left has been arranged by the 'restorer' is, moreover, entirely meaningless, and quite puzzling and tiresome,—even to an experienced eye. Nor can I allow that the result could have been satisfactory even if the work had been done at the present day, and by more competent hands than those to which it was then entrusted. It is impossible, in the nature of things, for an artist of one frame of mind to finish the work of an artist of an entirely different frame of mind,—separated from him by the gulph of 400 years; or to 'restore' anything whatever once gone (he can at best but *imitate* it more or less successfully)—as impossible as to 'restore' faded natural beauty; and what is really wanted is, the courage to let it alone, as the Cathedral Chapter of Gloucester did *their* east window some years ago, when it was proposed by an eminent firm of glass painters to 'fill in a heaven' in the vacant part of it. How far more interesting, again, the fourteenth-century fragments of glass now in the west windows of the aisles would have been if allowed to remain in the fourteenth-century windows from which they were taken, and to which they belonged, and the fifteenth-century fragments in the fifteenth-century windows from which *they* were taken, and to which *they* belonged, instead of being all, as now, huddled together in meaningless confusion! It cannot be too often repeated, or too clearly understood, that the *removal* of fragments, however small, and 'restoration' of fragments, whether large or small, are alike 'untrue in art, unjustifiable in taste, destructive in practice, and fatal to all those archæological interests and pursuits which it is the duty of this society to protect.'"

The proceedings then concluded.

THE PROPOSED NEW ASSIZE COURTS IN NEWCASTLE.

THE following report as to the proposed new Assize Courts for Newcastle and Northumberland has been presented by the committee having charge of that subject to the Council:—

Sir G. Gilbert Scott, R.A., of London, during a visit to St. Nicholas's Church restoration, having incidentally heard it was in contemplation to erect new Assize Courts, expressed a strong wish that he might be allowed to submit a design for the same, as he had devoted considerable attention to the construction of such courts. This was duly communicated to your committee, and resulted in a correspondence between their chairman and Sir Gilbert, as per copies appended to this report, which fully explain subsequent proceedings. Sir Gilbert has paid three visits to Newcastle, accompanied on the last occasion by his chief draughtsman. He has made a careful survey of the Moot Hall, the Guildhall, and the proposed site for the contemplated new Assize Courts. He has also inspected the Assize Courts at Durham and at Manchester, and had conferences with Mr. Lamb and Mr. Charlton (the county surveyor), both of whom have kindly furnished him with every information as to the assize requirements for the town and county. The result of his labours is the very elegant design and admirable internal arrangements, as shown in the accompanying drawings, which have met with the entire approbation of your committee, and are now respectfully submitted to the Council for consideration.

The report then goes on to describe the designs, and concludes with asking "the Council's approval of Sir G. Gilbert Scott's plans; that they will sanction their being submitted to the magistrates of the county, with a view to further negotiation, and, if approved of by the County, that it will authorise the committee to take such other steps as may be necessary to enable them to bring the subject before the Council in a more definite form."

The conditions under which Sir Gilbert Scott offers his services are set forth in the following letter, which is in reply to a communication from Mr. Young, who had informed Sir Gilbert that "the committee have no power to expend money without the previous sanction of the Council":—

"31, late 20, Spring-gardens, London, S.W.
April 15th, 1876.

My dear Sir,—In reply to your letter, I beg to say that in offering to submit a design for the Assize Courts, it is not my intention to cause any expense unless my design eventually be adopted, or I appointed the architect to the work, in which case I only make the usual charge on the work. At the same time, I suppose that, if my offer be accepted it will be with a bonâ fide desire on both sides that it may lead to my appointment. My meaning is simply this:—I greatly desire to execute this work, but decline to compete for it. Wishing, however, that the Council shall not be in a worse position for my preparing a design, in case I do not succeed in meeting their views, I offer to do so on the understanding I have named, viz., that if I fail to satisfy them I withdraw without making a charge. In making this offer, however, I do so in full confidence that they will deal with me as is usual with an architect expressly called in; that is to say, that I shall be enabled to procure all information as to practical experiments, and that if (as is hardly probable that it should) the scheme I first strike out may not be in all points to their minds, I shall receive in full confidence such criticisms as will enable me to revise and correct it. I assume, also, that the Council will not, after I have submitted a design, lightly, and without due reason, go to any one else or to competition, but will use their best endeavours to enable me to meet their views, dealing with and encouraging no one else while I am negotiating with them.

I remain, my dear sir, very faithfully yours,
GEO. GILBERT SCOTT.

Charles Henry Young, Esq.

P.S.—I will mention that I am convinced that this method is far more likely to ensure a good design than competition."

THE TUNNEL ACCIDENT IN THE CITY.

MR. W. H. Payne carried on an inquiry on Saturday last into the cause of the deaths of Edward Austin, 45; Edward Candler, 40; George Harris, 19; and John Coyle, 18, who lost their lives by the giving way of a newly-constructed vault on the extension of the Metropolitan Railway from Liverpool-street to Aldgate, as already mentioned. Messrs. Lucas & Aird are the contractors. The accident occurred nearly opposite Bishopsgate Church. The fissure is 38 ft. in depth and 36 ft. long.

Joseph Downs, a mason, said:—To make the tunnel, they dug out the solid earth, and supported the sides with timber, close boarded. The sides were afterwards bricked, and the height of the arch to the spring was then 13 ft. or 14 ft. It was 2 ft. 4 in. thick in its narrowest part, and 3 ft. 9 in. in the widest part, which was at the bottom on the concrete. The sides remain perfect. They were made of proper material, and in his judgment the work was properly done, and was solid and substantial. They did not test the work to see if they settled, but when they were solid the centres were put in made of wood, and in them the arch was built with bricks. They completed the arch with five rings, which made it 1 ft. 11 in. in thickness all over. The arch rested upon the walls and the centres combined, and when the centres were away the brickwork arch rested on the sides, and everything had been done properly and in the customary way. The workmen employed by the contractors were all good and competent. He examined the work portion by portion six times during its progress, and everything was all right. It was "keyed" in on the 28th, and

everything considered perfect, the centres and battens being there. They were removed on the 4th of September, and everything appeared all sound. The sides did not bulge in in any way. Above the five rings concrete was put each side in the spandrels sloped up to the crown. The concrete was allowed to set firm, and then coats of asphalte were placed on the top of it before the earth was put in. He could not form any notion of the weight that was put on the arch, and it was not entirely filled in when it fell. A sewer was being built under the arch, and the four men now lying dead were working in that sewer, which did not interfere with the foundations of the arch. He considered the arch had fallen through an error over which he had no control,—of filling in the earth unevenly on the top of the arch, and throwing an uneven strain upon it. The arch was very much exposed to the weather, and rain had been falling heavily for three days. The weight put on one side would turn the arch round; if it had been put on evenly the arch would not slip.

Mr. Ellis, manager to the contractors, stated that he had control of the works in question from their commencement. There had been no shifting of the walls. Five days were enough to allow the centres to remain for the arches to be safe. Rain had fallen, and he thought even the best of constructions might come to such a termination under such conditions. He confirmed the evidence of the former witness, who stated that an unequal pressure of earth thrown on one side would be sufficient cause for the accident.

The jury returned a verdict of "accidental death."

A GREAT BLAST AT LOCH FYNE.

IN connexion with the recent meeting in Glasgow of the British Association for the Advancement of Science,* Mr. Duncan, of Benmore, commissioned a steamer to take 300 members of the British Association to see Loch Fyne. A great exhibition had been promised, the explosion of six tons of gunpowder in one of the granite quarries on the Duke of Argyll's estate. The blast, in honour of the visit of the Association, was sent off in the village of Furnace. The village, as well as the quarry, takes its name from the circumstance that early in the present century works were established here by the Argyll Furnace Company for the purpose of making pig-iron from a particular description of ore which they imported from Lancashire, and smelted with charcoal made from the timber produced in the district. The product was afterwards returned to England to be converted and sold as charcoal iron, a superior class, which still commands a greatly higher price than the ordinary qualities. The company continued their operations at Furnace till timber got too scarce for their purposes. Furnace Quarry was at that period quite unknown. It was commenced by Mr. Wm. Sim in 1841, who previously had been engaged in supplying the Board of Police, Glasgow, with square dressed causeway stones, prepared from basaltic trap rock, commonly known in Scotland under the name of whinstone, and of which there is an abundant supply in the neighbourhood of Glasgow. The Furnace Quarry rock, though popularly termed granite, is said to be a porphyry. During the first ten years of Mr. Sim's occupation of the quarry, the boring, blasting, and quarrying operations were conducted in the usual way—slow, uncertain, and by no means free from danger. At the great International Exhibition of 1851 Mr. Sim obtained the opportunity of inspecting the quarries and the system of blasting by means of mines and large charges of gunpowder, as then in practice to procure rock to form the breakwater at Holyhead, and profiting by the experience gained there, decided upon adopting the same principle at Furnace Quarry. The first large blast fired there in 1852 proved itself so eminently successful as to induce a continuance of the system. Horizontal mines going inwards from the quarry face are preferred to vertical shafts sunk from the top surface. It is also found to be advantageous to have the full charge of gunpowder concentrated in one chamber. The present charge of six tons had been supplied from the Loch Fyne Gunpowder Works, in the vicinity of the quarry; and the *Morning Advertiser* describes so well what took place that we shall not seek for fresh words to do it in. The face of Furnace Quarry is about 200 yards inwards from Loch Fyne side, and it is 250 ft. in width from one side of the quarry to the other, and 245 ft. in length above the level of the quarry floor. A black patch indicated the vicinity of the chamber. The work has progressed inwards from this point in a straight line for a distance of 65 ft., and then branched off at a slight angle towards the side of the quarry for a further distance of 25 ft. The gunpowder chamber was then completed to a required capacity to contain the six tons of gunpowder. This being accomplished and made all as thoroughly free from the effects of damp as possible, the gunpowder was carried in bags and carefully stored in the chamber and the fuses inserted into the centre of the mass of powder. The next process was to build up a wall of turf, so as to cut off the connexion between the mine and the gunpowder. As all this work had to be done in the dark, it necessarily required much careful attention. A large portion of the mine was then built up with rubble, stone, and cement, and the remainder dammed up with clay, stones, and sand, the wooden casement containing the fuse being placed as the building and damming proceeds. The length of fuse used in this instance was 85 ft. It took nearly half an hour to ignite. The steamer took up its position opposite the quarry, the face of which had been cleaned, so that the effect of so great an explosion might be seen. Presently the hills reverberated in a deep rumble, which continued for some three seconds; the quarry was hidden in smoke, but there was hardly a ripple on the water, and the houses at the very base of the rock seemed scarcely to shake, the wreathy smoke from the cottage chimneys ascending as undisturbed as if some child had exploded a pop-gun. We had expected that so tremendous a blast would have thrown down the whole face of the rock, but it was not so. Even the flags which hung over the very brink of the precipice were unmoved, though one of the masts had been displaced along its whole length, and looked after the explosion very much as if it had divided the rock, just as a needle divides ice. There was a tremendous fall of stone into the depths below, but the stone in front of the powder chamber still held in position, and save that a quantity of rubble had evidently been disturbed, the only effect of the blast was a deep gullet in the rock. In fact, the granite hills of Scotland seemed to defy an explosion which would have shaken London to its centre, and which did actually lay a whole district waste some little time ago.

* The general proceedings have been so fully and so widely reported that we do not think it necessary or desirable to repeat the story.

THE NEW CONCERT HALL AND ADDITIONAL GROUNDS AT BUXTON.

THE Buxton Improvements Company was formed about six years since "in order to add to the attractions and increase the popularity of Buxton by the provision of enclosed gardens in which covered promenades and a concert-hall might be erected for the amusement and recreation of the public in all weathers, for the engagement and maintenance of the band, for the laying out and culture of the grounds and walks, and all such acts as may be served by the possession and use of ornamental and well-kept gardens and pleasure-grounds." For these purposes the Duke of Devonshire gave to the company about fourteen acres of admirably situated pleasure-grounds, on both banks of the river Wye, and well wooded. These grounds, known as the Hall Gardens, were re-laid with much taste and skill by Mr. Milner, of Norwood. One of the features of the scheme was a large concert-room, which was required owing to the fact that the present pavilion was incapable of holding the numbers that crowded to it at the concerts. The additional buildings have been designed to harmonise with the present buildings as far as practicable. The west corridor has been extended about 50 ft. in length, and is 5 ft. wider than the old one. The music-hall is octagonal in plan, and is over 100 ft. in diameter. It is surmounted by an octagonal dome 50 ft. in diameter. To the eaves of the aisles the music-hall is 29 ft. high, to the springing of the dome it is 38 ft. high, and to the apex of the dome from the floor the height is 68 ft. The constructive materials used are principally cast and wrought iron. The external columns of the aisles are of cast-iron, with foliated capitals, upon which is placed a continuous wrought-iron girder, forming the octagon; the inner columns supporting the dome are coupled, having ornamental bases and capitals, and partly fluted; upon these are placed wrought-iron lattice girders, making another continuous octagon, and forming a base to the dome. The hall and dome are roofed with slates, and the ceilings are of pitch pine, varnished and stencilled. There are eight triple-light windows to the bottom of the dome to light up the centre of the large area, and to assist in ventilating the room. All the iron work has been painted in colours and decorated in a chaste style. The lighting is by a sunlight in the dome, with the addition of brackets round the hall. There is also a sunlight of equal power to fifty lights over the orchestra. There are a band-room, a board-room, and a smoking-room. The whole building is warmed with hot-water pipes. The terrace has been extended about 400 ft. in length, and is 60 ft. in width. The total cost to the company has been about 30,000*l.*

THE EMPLOYMENT OF YOUNG GIRLS IN BRICKYARDS.

DIFFICULTY IN ENFORCING THE LAW.

THE Factory Inspectors' reports for the past half-year contain some curious incidents illustrative of the difficulty of enforcing the Brickfield Act of 1871. Mr. Blenkinsopp, sub-inspector for the Wolverhampton district, gives the following graphic account of his experiences:—

On the first visit to any works, or on any change in the law, I see the master, carefully explain the Act, and endeavour to show how he may overcome anticipated difficulties. This I did in 1870–71 in case of the brickworks; all promised strict attention, to which some half-dozen adhered. The rest only deceived me with apparent success. At my approach little girls were concealed. Report has it that I once stepped on a girl hidden under some matting without discovering her. One day I saw two girls run, and after much trouble they were produced from a hole under the engine. When prosecuted the master was fined 6*d.*! This opened my eyes, and I inspected more carefully, but for some time with indifferent success. Every possible device was resorted to by the brickmakers. Oldbury, one of the chief brickmaking places, has a population of about 16,000, and the hand of almost every man, woman, and child has been against me. The moment I get out of the train news is sent to every brickyard, a watch kept, and the girls concealed on my approach. I had to try various methods, the most successful one being to go to a station at a distance, and drive in a closed carriage by a circuitous route. Even thus I can, as a rule, only get to one brickyard unknown, for word is at once sent to the others. It is the interest of all concerned to employ little girls. The masters get cheap labour; wages are good, a woman moulder can earn from 22*s.* to 30*s.* a week, a girl of thirteen can earn 10*s.*, a girl of sixteen can earn 14*s.* or 15*s.* If a master saves 4*l.* or 5*l.* a week, what does he care if he is fined 3*l.* once a year? What does a parent of a girl who makes 12*s.* a week care for a fine of 5*s.* once a year? The master of large brickworks has been seen helping with his own hands little girls into a canal boat, so as to conceal them from me. One day a girl locked herself in an out-house where the brick moulds are kept, and I had to break the shutters open with a brick before I could get her name, for every one denied she was there. In about ten minutes there was a mob of 250 or 300 people in the brickyard. For perhaps two or three years I had a sort of running fight with the brick people, which was rather amusing, but at last things came to a climax. One day last May I found two little girls concealed under some hay in the loft of a stable in a brickyard, so I searched the rest of the place. There are three flued sheds, one through the other. At the top of the innermost one, in a dark corner, there were some bricks neatly arranged, about 5 ft. high, as though placed to dry, but which eventually proved to form a sort of box for concealing children. The occupier was with me, and as I approached the place he said, "You need not look there, Mr. Blenkinsopp; they are only bricks placed to dry." Then I knew the scent was warm. I looked over the top of the bricks, but could see nothing. Fortunately, I had a box of matches with me, and lighted one and put it over. Immediately seven children stood up, and began to cry furiously. I tried to pacify them, telling them I would not hurt them, and asked for their names. They only cried the more, for both masters and parents frighten the children by telling them that the inspector would take them to prison or eat them. In the midst of the noise the occupier vanished; news was sent to the parents, some of whom, together with the brick-moulders, rushed upon me. Before I was aware, they seized me from behind, pulled down the bricks, and rescued the children. Though I was somewhat ignominiously hustled about, I stopped two of these children till I obtained name and address, making four caught in this work. The rest, of course, escaped, and I could only recognise one of the persons who obstructed me; this one I prosecuted. The fines and costs of the occupier amounted to about 16*l.*, and on the parents to about 17*s.* each.

Mr. Blenkinsopp goes on to say that a better state of things appears to be in progress.

Mr. Bowling's report on the brickyards of Tamworth is much more satisfactory. He says:—

"I have completed a round of the brickyards in the Tamworth district, and I think it very satisfactory to be able to report that I not only found no women at all employed, but also a unanimous opinion expressed that there was no necessity for female labour in brickyards, such labour being regarded as in the highest degree mischievous in all its bearings. I found several half-time children over ten years of age employed, but only in one instance irregularly, and that was at a small brickyard at Curdworth which had never been inspected before."

Destruction of Scarborough Spa by Fire.—On the night of the 8th inst., the buildings known as the Scarborough Spa were destroyed by fire. The block of buildings included a saloon or theatre, spacious refreshment-rooms, &c. In the hurry and excitement of the moment there was little time to save any of the valuable property. Portions of the goods were, however, removed, and among them the painting by Sir Noel Paton, "The Man of Sorrows." The building was designed by Sir Joseph Paxton.

YARMOUTH AQUARIUM.

SIR,—Having read your description of the above—the last school for piscatorial instruction—and also the description accompanying the view in the *Illustrated London News* of Saturday last, there appears such an extraordinary difference that I beg to ask whether you can give any explanation that may lead me, and others also, to put faith in the literature of the day, the duty of which I always understood was to place facts before the public, and not to mislead, which in this case either you have done or your pictorial contemporary has. As I read your account there is the low aquarium hall only, the roof of which is the skating-rink. The other account gives a large assembly-room above the aquarium hall, and rooms for attendants as well, and all appears to be topped by a curved roof. At the four angles high towers, &c., are shown. Also a glass building like a large conservatory at the front or south end.

These accounts being irreconcilable with one another is my excuse for seeking for some explanation. As it stands, one asks who can believe things even when set before us in black and white? S.

*** Our esteemed contemporary, whose illustrations week by week of passing events are little short of a marvel, has been led into error; in representing such a building as is shown as ornamenting the strand at Yarmouth. We must say, as Macbeth did after a similar deceit proceeding from the heat-oppressed brain, "There's no such thing." The lofty hall, the towers, the great conservatory, are all creatures of the imagination; and if our correspondent proposes to visit Yarmouth he may make up his mind that he will find nothing more at present than the very modest building described in our pages.

"ART AND CIVILISATION."

SIR,—One may easily be drowned in the eddies of this question. It requires a careful and thoughtful navigator to steer a right course; but if the matter be not rightly grasped, art may suffer disparagement.

Civilisation is a question of degree. Civilisation of the highest kind has never yet been reached. The past was hollow, and the present is far from being solid and stable. This ideal civilisation is, in fact, a most difficult thing to attain to, and the past ages of the world have only furnished quotas in the progression.

The question of the relation of art and morality assumes clearness as soon as we place it in the following form. Is it impossible either for a moral people to have a grand national art, or for a moral man to be a great artist? If so, let art be abandoned; if not, all else is beside the question, and is only what comes within the facts of history and of individual experience, viz., that it is possible for both states and individuals to have the knowledge of the moral law, and to be conscious of the advantages of obeying it and yet be immoral. Again, we know that it is possible for a state to exhibit a public morality whilst privately vicious; that it is also possible for an artist to be moral in his art and vicious in his life; but this is not a relation peculiar to art, it may exist in all professions. The knowledge of the right and the observance of the right are not always linked together.

But this knowledge of in what rectitude consists is the basis of civilisation and progress, and though neither states nor individuals may as yet be able to fulfil its full conditions, yet that knowledge is the pole-star by which the world is forging ahead, and to which, as it ever and anon swerves, it again turns its eyes and endeavours to bear up in the right course.

Both vicious states and vicious individuals may exhibit public virtue. The vicious may have the knowledge of rectitude, and of the value of its practice, and render their homage to virtue in noble public acts, in lofty literature and high art. The highest art is that which is conformed by that moral consciousness, and is moral notwithstanding the imperfections of its author. The highest art must ever be moral in its form and qualities.

The highest art of all, perhaps, is not that which fashions paint and marble, but men. And they who know the laws of rectitude and of modifying and newly developing life, know that a people can only be fashioned into beauty by their observance of rectitude of life, and that in the measure in which they swerve from this observance do they lapse into ugliness and deformity. Beauty, then, that ideal of the artist, is the moral form of existence, and can only be realised, become a living reality, by rectitude of life. Beauty, living beauty, can never be severed from the observance of the moral law but at the penalty of decadence.

Art belongs to the natural man only to a certain and very poor extent, no great art can come but of the knowledge of good and evil.

W. CAVE THOMAS.

ARCHITECTS AND CLERKS OF WORKS.

MR. WILLIAM CROZIER, architect to the county of Durham, &c., has raised a point of some interest in regard to the appointment of clerks of works.

It appears that the Durham Board of Guardians are erecting a new vagrant ward, at a cost of 3,000*l.*, of which Mr. Crozier is the architect. The guardians, unknown to their architect, resolved to appoint a clerk of the works for the new structure, and advertised for candidates. Upon this reaching the knowledge of Mr. Crozier, he wrote the following letter to the Board's clerk:—

"August 24, 1876.

Dear Sir,—I understand the clerk of the works elected by the Board is not coming, and I am bound to say on this subject that I consider it very strange that I was never in any way consulted in the matter.

Architects, generally, are consulted, if they do not actually appoint, which is more generally the case. Many of the names that I saw mentioned in the newspapers were no more fit to be clerk of works than to be Viceroy of India.

I do not say this as if I had some end in view, as at the present moment I have not the slightest idea where I could get a clerk; and, for my part, I think that with the contractor and foreman we have got, the plainness of the work, and the architect being in the town, the appointment of a clerk of works is quite unnecessary.—Yours truly, WILLIAM CROZIER."

This communication being read at the last Board meeting, brought on a lively discussion.

One guardian considered it was a matter in which Mr. Crozier had no right to interfere, as he was merely employed as an architect, and they ought to have an independent person to look after the building.

Eventually the Board decided to appoint a clerk of works of their own selection, without further advertising.

EXHIBITION OF SANITARY, DOMESTIC, AND EDUCATIONAL APPLIANCES.

NOTWITHSTANDING the fears entertained to the contrary, an Exhibition of this kind will be held in connexion with the Social Science Congress, in Liverpool, and will continue from the 11th to the 21st of October. The Drill Hall of the First Lancashire Rifle Volunteers, St. Anne-street, Liverpool, has been obtained for the purpose.

The object of the Exhibition, as heretofore, is to bring under the notice of the public generally, and particularly those who are interested in social, sanitary, educational, and economical questions, the latest scientific appliances for improving the public health, promoting education, and advancing social economy. The classes are arranged to admit all sorts of utensils and appliances appertaining to the advancement of social science. As the time is short application should at once be made.

The mangement of the Exhibition, as heretofore, will be under the superintendence of a committee.

THE NORTH AND SOUTH WOOLWICH TUNNEL UNDER THE THAMES.

PROPOSED CARRIAGE-WAY.

AT the last meeting of the Woolwich District Board of Works the new subway about to be constructed under the Thames between North and South Woolwich formed the subject of discussion by the Board. Mr. Topley, one of the members, drew attention to the fact that the thoroughfare was only to be for foot-passengers, but he thought that if the directors could be prevailed upon to extend the scheme to the extent of a carriage-way, it would be one of the best things that could happen for Woolwich, as he believed trade would flow in from all directions. Captain Behenna, another member, expressed a similar opinion, observing that he believed a subway for foot-passengers only would not be of much use. He doubted whether it would be a financial success inasmuch as it would have a strong opponent in the steam ferry, and the chairman said he was of the same opinion. Mr. Farnfield, the solicitor, said that the footway would cost 70,000*l.*, and a carriage-way 350,000*l.* He suggested that if a public meeting were called, and half the 350,000*l.* subscribed, the directors would probably be willing to reconsider the matter. It was further suggested that the difficulty might be overcome if the Metropolitan Board would assist the Subway Company. Ultimately the matter was referred to the Highway Committee for consideration.

THE FALL OF AN ARCH AT MANCHESTER.

ON the 7th inst. the Manchester City Coroner, Mr. Herford, held an adjourned inquest on the body of Philip Connelly, a bricklayer's labourer, who was killed by the falling of an arch in a building in course of erection in Fennel-street, as recorded in last week's *Builder* (p. 889). The accident took place on the 31st ult., and the coroner's inquiry had been adjourned, in order that the premises in question be inspected by an architect. This had been done by Mr. Richard Hartley Goldsmith, who said that the plans of the building, which had been prepared by Mr. Richard Thomas, jun., seemed to have been generally carried out. Witness examined the remains of the fallen arch, and he found that the immediate cause of its destruction was the removal of the centres. There had been an evident want of skill and care in designing and carrying out the work. Witness considered that the arch had been built by the bricklayer in a slovenly and careless manner. The mortar-joints varied from half an inch to an inch in thickness. There was a tie-rod to secure the work, but it had no effect in restraining the thrust of the arch, in consequence of the imperfect way in which it was riveted to a slight piece of iron, in no way fit for the purpose for which it had been made. If the rod had been carefully attached, he was of opinion that the accident would not have happened. There had been a want of skill and judgment in designing an arch in a position like the one in question, without iron springers and a sufficient number of ties so arranged as to avoid the flues, and having plates properly secured to the rods.

Mr. R. Thomas, jun., said that the plate to which the tie-rod was fastened appeared to him to be good, because he had sounded it on the blacksmith's anvil. Witness told the smith to rivet the rod to the plate. Witness did not see him do it. He thought that the weight of the brickwork was sufficient, and that the joists coming in at right angles would assist to prevent the fall. It was never intended that any heavy weight should go over the arch. Witness could not say that the teagle shown in the plans was not intended for the unloading of light spring carts. He should think that 1 ton or 1½ ton would be the utmost.

The coroner summed up, and the jury, in returning a verdict of "accidental death," expressed the opinion that there had been a want of experience on the part of the architect; that the work in the construction of the arch had been imperfectly done; and there had also been a want of supervision.

WOOD-CARVING CLASS, SHEFFIELD SCHOOL OF ART.

THE prize of 10*l.* 10*s.*, offered by Mr. Godwin for the best wood-carving executed in the school, has been awarded to Mr. Henry Archer.

The Carriage of Explosives.—Owing to the shutting up of many of the harbours, and the stringent regulations which are being enacted for others in regard to explosives, coupled with the refusal of nearly all the railway companies to carry dynamite, much expense and inconvenience is being caused to the manufacturers and users of dynamite and other blasting agents, and obstacles thrown in the way of a variety of useful public undertakings, and of the mining industries of the country. The absence of properly regulated transit facilities leads to surreptitious conveyance, and serious danger not only to the travelling public, but to the property and plant of the railway company as well. The greatest precaution should, of course, be observed, but the necessity for the transmission of such materials at reasonable cost must nevertheless be recognised.

THE STAFFORDSHIRE INSTITUTION FOR NURSES.

THE foundation stone of a new building for the Staffordshire Institution for Nurses was laid on the 2nd inst. The site is a short distance from the entrance to the Mount at Penkhull, and was presented by the Rev. Sir L. T. Stamer, bart. The home will be specially constructed inside with disinfecting apparatus and non-absorbent cement walls which can be constantly washed with disinfectants, which is necessary to enable the nurses to be sent from house to house without danger of carrying infections with them. The building will comprise on the ground-floor outer porch, entrance-hall with staircase, corridor, from which are entered two sitting-rooms and dining-room, side lobby, with entrance from back, communicating with kitchen, scullery, store, pantry, cellars, and yard. On the first floor, five nurses' double bedrooms, matron's bedroom, bathroom, disinfecting-room, &c. On the second floor, two double bedrooms and box-room. The style is Domestic Gothic, of an inexpensive character, and it is built of white bricks, effect being sought in the proportion and disposition of the building, and by the introduction of coloured bricks and stone dressings. The cost of the building will be about 2,000*l*., a considerable portion of which yet remains to be raised. The architects are Messrs. Scrivener & Son, Hanley; and the builders, Messrs. Inskip, Longton.

PROPOSED DRAINAGE OF DUKINFIELD.

MAJOR TULLOCH, R.E., of the Local Government Board, held a preliminary inquiry at Dukinfield, on August 31st, arising out of complaints that had been made by the owner of the estate as to a nuisance caused by the sewage from certain portions of the district being allowed to flow into the natural brook courses.

Mr. Marshall, solicitor to the Board, observed that the statements which had been set forth in this respect had been greatly exaggerated, and that with respect to the blame, it rather rested with the complainant than with the Board; for before the commencement of the Board, the owner of the estate opened out new streets, and allowed houses to be built thereon, without providing proper outfall sewers. No doubt, by recent Acts of Parliament the Board would be held responsible for any nuisance that might arise from this condition of things; but the Board did not and had not shirked their responsibility in this respect; for, since their establishment in 1856, they had expended no less a sum than 60,000*l*. in works of sewerage, street improvements and water-supply, and at the present time the surveyor to the Board was under instructions to prepare a scheme of sewerage by which the sewage of the district might be conveyed to one point.

Mr. Cartwright, Assoc. Inst. C.E., surveyor to the Board, produced a plan showing an outline scheme of what is proposed to be carried out, the estimated cost of which, exclusive of land, would not be less than 25,000*l*. Major Tulloch expressed himself as pleased with the plan, and urged the Board to at once carry out the same, as if carried out to completion the rateable value of the district would rapidly increase. It was understood that as soon as the plans, &c., were completed an application would be made to the Local Government Board to sanction a loan of money to carry out the works.

THE PUBLIC BUILDINGS, PHILADELPHIA.

SIR,—In your issue of July 22, I find an excellent illustration of the new Municipal Hall at Philadelphia, Pa., of which I am the architect.

Accompanying the drawing is a short description, in which mention is made of Mr. Frank H. Loenholdt, crediting him with a position, as regards this building, to which he is not in any way entitled, and which, in justice to those assistants who have been with me since the commencement of the work, requires proper explanation and correction.

From its inception until the present time I have held the position of architect, and at no period has there been associated with me in my department any gentleman other than assistant, whose duty is to produce, under my directions, such drawings as are required to elucidate my design in detail for the use of workmen and others engaged in the construction of the building. In such a capacity, at the beginning of April, 1875, Mr. Loenholdt was engaged to draw a perspective elevation of the new hall, and on October 1st of the same year, he having completed the drawing, his connexion with my office ceased, and at no time previous to, during, or since this period, has he held any other relation to the building than that just stated.

I trust that my request for a correction of the error named in your article may meet with prompt and favourable consideration. JOHN MCARTHUR, Architect.

New Public Buildings, Philadelphia, Pa.

BOILER EXPLOSIONS.

SIR,—Boiler explosions are again to the fore. My remedy is,—The top plate nearest the safety-valve to be concaved steel. In the event of valves sticking, and steam generating too fast, the plate would bulge up to stays and crutch, and lift any valve off its throttle.

This could be tested when the boiler underwent the hydraulic pressure test. R. T.

MASTERS AND MEN.

Sheffield.—Messrs. Manuel & Son, of the Devonshire Cabinetmaking Works, Sheffield, gave notice to their cabinetmakers that on the expiry of a fortnight they would cease to employ union men. These notices expired on the 2nd inst., when about half of the workmen took their chests, and went out on strike. The others remained with the masters, who are fighting the battle for the other employers in various parts of the kingdom.

Whitehaven.—A notice intimating a reduction of wages was posted at the Whitehaven Shipbuilding Yard, to the extent of 1d. per hour on the carpenters, and 10 per cent. on all other classes, to come into force on September 7. The company have in their employ about 800 hands. Meetings have been held by the workmen, who consider the proposed reduction in excess of trade requirements, and representations to that effect have been made to the manager. Ship carpenters work 54 hours per week, at the rate of 7½d. per hour, and the proposed reduction would effect them to the extent of 4s. 6d. per week. On the 2nd inst. the company informed the men that they meant to adhere to the notice, and the workmen seem determined not to submit to a reduction.

CHURCH-BUILDING NEWS.

Laxton.—On the 7th ult. a new church was consecrated at Laxton, near Howden. The new church replaces one erected two centuries ago, but is on the opposite side of the road, the site having been given by Mr. P. Saltmarshe, of Saltmarshe Hall, who has also contributed nearly 800*l*. to the building fund. The estimated cost is 3,300*l*.

Medbourne. — The chancel of Medbourne Church, near Market Harborough, was lately opened by the Bishop of Peterborough, after rebuilding. The cost (575*l*.) has been borne by the rector (the Rev. C. F. Eastburne), who entrusted the work to Mr. Edwin Dolby, of Abingdon. The architect has carried out the work upon the old lines, using, where it was possible to do so, the old stones in the tracery of the windows, drip-stones and corbels, and buttresses. There are two windows in the south wall and three in the north, and in the east is a stained three-light window, which has been presented by Mr. H. J. Grieveson and the late Mrs. Ord. The subject is the Ascension.

Tonbridge.—The new church known as St. Saviour's Chapel of Ease has been consecrated by the Archbishop of Canterbury. The building has been erected by Messrs. Punnett, from plans by Mr. Ewan Christian, of London. It is calculated to seat 500, and has been built at the sole expense of Mr. Deacon, the patron of the parish of Tonbridge.

Eldersfield.—About twenty-five years ago the parish church of Eldersfield, in the county of Worcester, was partially restored at an expense of 820*l*.; since then, during a severe thunderstorm, the spire was struck by lightning, and had to be thoroughly repaired at a further cost of 200*l*., which was collected by Church-rate. It was stated at the time that a new roof and south wall to the nave were necessary, but could not then be taken in hand for want of funds. The completion of the work is now being carried out under the direction of Messrs. Waller & Son, architects, of Gloucester, by Mr. James Griffiths, builder, of Eldersfield. On taking down the old roof, it was found that the timbers were completely rotten, and the wall crumbling away. A new roof and south wall to the nave, with a buttress, are now being rebuilt.

Bourn.—The parish church of St. Mary at Bourn, Cambridgeshire, was re-opened on the 9th ult., after restoration. The nave roof has been entirely renewed, but the form of the old one has been preserved. The old timbers were so completely rotted away that it was found impossible to attempt to retain them. The aisle roof retains the old wood, which was fairly sound. The main alteration in the fabric is in the chancel arch, which was small, and of very poor and meagre character. It has been taken down, and considerably enlarged, and the screen enlarged to fill the new arch. The whole of the floor has been re-laid, and the seats re-fitted. The bench-ends were of very good character, and every portion has been scrupulously preserved. The pulpit is formed into tracery of similar character to the seat-ends. The chancel has been restored by the Master and Fellows of Christ College, who hold the Rectoral Tithes. The walls have been made sound, pointed on the exterior and plastered internally. The roof retains a considerable amount of the old timber. All the main beams of the old roof remain, but the smaller rafters, &c., being much decayed, are replaced, and the angles at the head of the hammer-beams have also been replaced. The windows and the eastern portion of the chancel (excepting the east window) were restored by the college some years ago. The seating has been re-modelled in its original form as nearly as can be ascertained, and the old bench-ends with the curious finials have been carefully refixed. The Earl of De-la-Warr has been at the expense of the restoration of the south transept, which has formally been a mortuary chapel for the family. Much remains still to be done, and it is hoped the poor crippled spire will not long be left as it is. This tower with its spire quite ranks as a county monument. The architect is Mr. W. M. Fawcett, M.A., Cambridge, and the contractor, Mr. Taylor, of Cambridge. The cost of the present work is 2,200*l*.

Morecambe.—On the 9th ult, the Bishop of Manchester laid the foundation-stone of a new church at Morecambe. The new church will be free and open, and capable of seating about 700; to be at first a chapel-of-ease to the parish church, and eventually a district church with separate parish. The church will be built on a central site of 1,015 square yards, in New-street, which, with an adjoining plot of 495 square yards, has been secured at a cost of 780*l*. The estimated cost of the church, with tower and spire, is 8,000*l*. Messrs. Paley & Austin, of Lancaster, are the architects.

East Garston. — All Saints' Church, East Garston, has been re-opened after the re-building of the chancel and the restoration of the Seymour Chapel. The cost of re-building the chancel has been defrayed by the Dean and Canons of Christ Church, Oxford; and Sir Robert Burdett; while the expense of restoring the Seymour Chapel has been borne by the Vicar and his friends, past and present. The architect engaged was Mr. Hugall, of Oxford; and the contractors, Messrs. Hook & Ward, of Stroud.

Ladbroke.—The little parish church of All Saints, Ladbroke, was lately re-opened, after restoration, at a cost of nearly 2,000*l*. The floor of the church has been lowered some 18 in., and the roof has been raised some 2 ft. or 3 ft. In doing this, great care was taken in using the old roof, which had been in existence since the sixteenth century. The whole of the church has been re-seated throughout, the sittings being of stained oak, the carving of which is of the most elaborate description. The pulpit and stalls are also of stained oak. In carrying out the alterations in the chancel, evidences were discovered that three sedilia used to exist on the right-hand side of the communion-table, and these have been restored, Sir Gilbert Scott, the architect, having furnished designs for canopies, with finials to as nearly as possible correspond with the restored sedilia. An Easter sepulchre, and ambry on the left side of the holy table, have also been restored, and a small leper window on the north side of the church, near the chancel, which had been blocked up, was accidentally discovered and restored. The organ has been erected on the north side of the chancel, Messrs. Farmer & Brindley doing the carving. Mr. George Hannaford had the supervision of the alterations, which were carried out in a workmanlike manner by Mr. William Watson, builder, Napton.

Speke.—A new church has lately been opened for the district of Speke, hitherto united to Garston and Hale, but now created a separate parish. The new church has been built at the entire cost of Mr. Sprot, and is in the Early English style. It is built of stone, rough faced, having a spire of 105 ft. from the ground, with a chime of bells. The simplicity of the exterior is in a manner followed out in the interior. The fittings are plain, but substantial. The organ is placed in a chamber in the north side of the church, and has been built by Messrs. Gray & Davison. The church is capable of seating 250, and all the seats are free. The architect was Mr. Pearson, of London.

Lighthorne.—The parish church of Lighthorne was re-opened on the 10th ult., after rebuilding. With the exception of the tower, the whole of the old church has been pulled down. The newly-erected portions consist of nave, with aisle, chancel, and mortuary chapel, the latter covering the vault in which deceased members of the Willoughby family are interred. The north aisle is divided from the nave by circular columns,

composed of Burton stone. The interior of the church is cased with dressings of that stone, and the wall-stone is white lias. The chocolate colour of the Burton stone blends very agreeably with the creamy lias. The reredos is of Corsham Down stone, with mosaic panels, and was executed by Mr. John Smith, of Birmingham. The whole of the work has been carried out by Mr. Wilkins, builder, Lighthorne, Mr. William Lait, Compton Verney, efficiently acting as clerk of the works. Mr. John Gibson is the architect.

Newmarket.—A meeting was held in the vestry of St. Mary's Church, Newmarket, on the 4th inst., for the purpose of considering the present state of the porch of the church, when it was resolved,—"That Messrs. Clark & Holland's plan and approximate estimate for the restoration of the porch and the repairs to the belfry windows of St. Mary's Church be adopted, and the work executed by Mr. R. Arber, under their supervision."

Darlington.—On the 30th ult. the new Church of St. James, Darlington, was consecrated by the Bishop of Durham. The building comprises nave, 68 ft. by 32 ft.; chancel, 36 ft. by 21 ft.; north and south transepts, each 20 ft. by 14 ft.; organ-chamber and sacristy, the latter occupying the lower portion of the tower, which is placed at the junction of the south transept with the chancel, and, together with the spire, rises to a height of about 148 ft. The east end of the chancel is apsidal in form. The style adopted is fourteenth-century Gothic, with characteristic window tracery, and the transepts and chancel are separated from the nave by massive moulded arches in ashlar, springing from carved corbels, with red Mansfield shafts. The chancel is provided with sedilia and reredos, and further enriched with arcading and diaper work below the window-sills, while the seats are open benches of pitch pine, with sloping backs and moulded ends. Accommodation is provided for about 500 people, and the church is so planned as to admit readily of future enlargement. Of this design the chancel and organ-chamber, together with the tower and spire, yet remain to be completed. For the present a small temporary chancel is provided. Up to the present there have been about 4,500*l.* expended on the building. The architects are Messrs. Ross & Lamb, Darlington; and the contractors,—for masonry, Messrs. Simpson & Cowling; joiners' work, Mr. R. T. Snaith; slating, Messrs. Pattison & Son; plastering, Mr. J. H. Hope; plumbing and glazing, Mr. R. Smith; and painting, Mr. S. Harrow; clerk of works, Mr. Bryans,—all of Darlington.

Skendleby.—The parish church of Skendleby, Lincolnshire, which is at present in a sad state of decay and dilapidation, is about to be restored, under the direction of Mr. G. G. Scott, jun., the contract having been taken by Messrs. White & Wood, of Alford. Mr. Scott, in his report of the condition of the building, writes,—"The church has many good points. Such as it is, it carries us back to the reign of Henry III., if not earlier, and it forms a *resumé* of English history from that period downwards; but the state of the fabric is exceedingly bad, and probably it will be found still worse upon a more detailed examination. Rebuilding will be not only the cheapest, but the only course open. In rebuilding, I should endeavour to retain as much as possible of the character of the old building. I should follow generally the original plan, and should reuse all the old windows and other architectural features which it is possible to retain." The estimated cost of the restoration is 2,350*l.*; the actual amount of tender is 2,484*l.*; incidental expenses, such as architect's commission, will increase this sum to at least 2,650*l.* This does not include a vestry and new porch, which are much needed.

Newdigate.—The ancient parish church of Newdigate, Surrey, is reported to be in a sadly dilapidated state, and an effort is being made to restore it. Plans have been prepared by Mr. T. E. C. Streatfield, architect, London, and approved of by the Bishop of Winchester. To effect the restoration, the sum of 1,700*l.* will be required.

Hartshead.—The Rev. T. King, vicar of Hartshead, has received from Kirklees Hall, the residence of Sir George Armytage, bart., plans and an estimate, prepared by Sir Gilbert Scott, for the restoration of Hartshead Church. The cost is computed at about 3,000*l.*, and it is said that a lady will furnish the necessary funds. Both the old church and its surroundings are thoroughly old English in character, and the *Halifax Guardian* hopes that the proposed restoration will not rob the quaint old edifice of its picturesque appearance.

Bramley.—Bramley Church, Surrey, has been re-opened, after restoration and enlargement by the addition of a south aisle. The church formerly consisted solely of a nave and chancel, but in 1850 a north aisle was added at the cost of Mr. Sutherland. The exterior of the new south aisle is of Bargate stone, with dressings of the same material. The inside walls are stuccoed, and the arches and windows of chalk, with string-courses of Farleigh Down stone, and the large west window is also of stone. The roof is of yellow deal, and open-timbered. The addition will furnish seating for about 150 more persons. Other improvements are the erection, by subscription, of a new vestry and organ-chamber on the north side of the chancel. The nave has been restored, the roof being thrown open and plastered. The gallery has been removed, and the nave lengthened by the addition of an arch. The chancel has been restored throughout by the lay rector, Mr. G. A. Godwin Austen. The entire seating of the church is new. The church is heated by hot-water apparatus, provided by Mr. Jackson, of Bramley. The whole of the restoration and additions have been executed from the designs of Mr. Woodyer, architect, Graffham, by Messrs. Wheeler, Bros., of Reading, Mr. Brown being foreman.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Liverpool.—On the 15th ult. the foundation-stone of the new Roman Catholic Church of St. Joseph, Grosvenor-street, was laid by the Right Rev. Dr. O'Reilly. The cost of the building will be 10,000*l.* It replaces an older building, in which, in 1870, fifteen people were killed by a "crush."——The laying and blessing of the foundation-stone of a new Roman Catholic Church in Toxteth Park took place on the 16th ult., on a piece of ground facing High Park-street and to the rear of the Mount Carmel Schools. The cost is estimated at 4,000*l.* The church will be erected in the Early Decorated style of architecture, will be about 110 ft. long by 60 ft., will run from west to east, and will be built of stone and pressed brick. It will accommodate 800 people. No decision has been arrived at respecting the internal decorations and fittings; but, in accordance with the new decrees, the choir will be at the sanctuary end over the sacristy. Mr. J. O'Byrne, Southport, is the architect.

Walton.—On the 9th ult. the Right Rev. Dr. O'Reilly, the Roman Catholic Bishop of Liverpool, laid the foundation-stone of the new Catholic Church of the Blessed Sacrament, Rice-lane, Walton. The site is on the east side of Rice-lane, and there is sufficient land for presbytery and schools. The style will be Early Decorated, and the edifice will be simple and spacious, affording accommodation for between 600 and 700 worshippers. The altar or chancel end will be to the east. On each side of the chancel will be side chapels, and there will be a nave and north and south aisles. The length of the building will be 104 ft., and the width 53 ft. The principal entrance to the sacred edifice will be at the west end, opposite Rice-lane, and a short street running eastwards from Rice-lane will give access to a porch at the north-west angle of the church. When the state of the funds will permit, it is intended to erect a belfry and spire at the north-west angle. The cost will be about 4,500*l.* Mr. Edward Kirby is the architect, and the contract has been entrusted to Mr. James Leslie, of Bootle.

Exeter.—An addition to the Roman Catholic Church at Exeter, in the shape of a sculptured statue of St. Patrick, was unveiled on the 6th ult. The figure has been wrought from a finely-grained block of Caen stone, by Mr. Harry Hems, who has other commissions to execute for the same church.

Gateshead.—Plans for a new presbytery, in connexion with St. Joseph's Roman Catholic Church, Gateshead, have been prepared by Messrs. Dunn & Hanson, Newcastle. The building will be of stone, and in keeping with the style of the church. The cost will be about 2,000*l.*

Ditton.—On the 22nd ult., the (R.C.) Bishop of Liverpool (Dr. O'Reilly) laid the foundation-stone of a new Catholic church, to be dedicated to St. Michael, on the estate of the Marchioness Stapleton-Bretherton, close to Ditton Hall. The new church is to cost between 18,000*l.* and 20,000*l.*, and it is entirely the gift of the proprietress of the estate. The building will be a large and substantial one, the material used in its erection being chiefly Rainhill stone. The design is Gothic, with early French details. At the west end will be a tower, 120 ft. high. The nave roof will be 60 ft. high. The nave is 56 ft. wide and 83 ft. across the transepts, and the total length is 152 ft. There will be sitting accommodation for 800 persons. The architect is Mr. Clutton, of London.

South Shields.—The new Roman Catholic Church of St. Bede, Westoe-lane, South Shields, was opened on the 22nd ult. by the Rev. Dr. Chadwick, Bishop of Hexham and Newcastle. The building stands at the corner of Westoe-lane and Percy-street. It is built of freestone, in the style of Gothic architecture which prevailed towards the end of the twelfth century. The erection consists of a nave, with aisles, the chancel, two lateral chapels, placed at the extreme end of the aisles, a large sacristy, and a tower. The total interior length is 118 ft., and the width 58 ft. 6 in. The nave is 60 ft. in height to the apex of the roof, and is lighted by a clearstory. It is 26 ft. wide, and divided from the aisles by an arcade of five arches on each side, springing from octagonal columns, with moulded caps and bases. The sittings accommodate over 700 persons, but the entire building, with the vacant space at the end of the nave and aisles, will afford accommodation for 1,000. The chancel is spacious, being 30 ft. long and 22 ft. wide, divided from the nave by an arch 40 ft. in height. The cost will be 9,000*l.* The church has been built from designs by Mr. Gibson Leadbitter, but the work has been carried out under the immediate superintendence of Mr. T. C. Nicholson, of Newcastle, architect. The contractor is Mr. Joseph Fishburn.

"HOW I GOT ON."

MR. FREDERICK SAGE, the glass case manufacturer, is a prosperous tradesman, and on the 9th inst. he gave a dinner to the villagers at Freston, the place of his birth (the clergy and gentry assisting), and at the close of it told them something of his early life. It was a curious and instructive story, and this is the pith of what he said. He is the son of a carpenter belonging to Freston, named Joseph Sage, and for a time worked under his parent's eye. This, however, was not sufficient for an energetic lad who longed to start in the world on his own account. He pondered the subject, and at last, when about eight years old, decided to set up business on the enormous capital of 6d. He thought that if he could make some knife-trays he might reap a small profit; but then he remembered that he had only 6d. to invest, and that that would not go far at a timber merchant's. But he was not to be deterred, and went to Ipswich, where he purchased an empty tea-chest at a grocer's, which he determined to convert into his knife-trays, besides which he also made some candle tinder-boxes and stay-busks. With these wares at his back he trudged to Woolverstone and Chelmondiston, and met with a fair amount of luck, returning in the evening with his pockets heavily laden with coppers. Thus did he commence his career in life. This success opened his father's eyes as to his worth, and he was set to hurdle-making. But this was not enterprising enough, and Frederick turned his thoughts towards Ipswich, where he thought he might obtain work as a joiner. He looked at his clothes, which he considered hardly good enough for such a high calling, and thereupon very liberally helped himself to his brother's belongings, and rigged himself out in a carpenter's jacket and white apron. Adorned thus, he went to Ipswich, and applied to the foreman of some works at the corner of Museum-street, who told him he was too young a man, as one was wanted who could make a mahogany door or build a pig-sty, evidently thinking the young aspirant more fit for the latter than the former class of work. The poor lad went to several other places, but failing to secure work turned his footsteps homewards. As he was passing over Stoke Bridge, he saw a steamer with a notice stating that she conveyed passengers to London. Just the thing, thought Frederick, and he went home full of his project, determined to invest his then capital of 10*s.* in a trip to the great city. He at once carried out his purpose, and was landed at Blackwall. There, of course, he was altogether out of his latitude, but was too proud to let the crowd around know

that he was a stranger, and, hearing many asking for tickets for Fenchurch-street, he did likewise, and eventually found himself on London Bridge, and afterwards at the Elephant and Castle. Here, to use his own words, he was "wholly stammed" at the immense amount of traffic, but still he kept his wits about him, and, fearing to lose himself, retraced his steps, till, becoming tired, he went into a coffee-house and engaged a bed for 1s. He slept at the top of the house, and found that he had plenty of company during the night. He was astir early in the morning, but would not venture to remain in London any longer, as he feared bankruptcy, on account of his 10s. running low. He then worked in Ipswich for some long time, but his services were not appreciated, and, through the aid of a friend, he secured work in London as a carpenter. By this time he had entered into the bonds of matrimony, and of course had to look out for himself. As he passed through the streets of London in pursuit of his calling, it struck him that if some of the tall warehouses he saw were fitted up with speaking tubes a good deal of time, and consequently money might be saved. At this time he had a fund of 20s. and determined to set up in business, and had some circulars prepared setting forth his plan of the speaking-tubes. This was on a Monday morning, and by dinner time he had distributed several of the circulars but had not obtained any orders, and Tuesday passed in the same way. On Wednesday morning he again sallied forth, and this time was asked to make out an estimate for fitting up a large warehouse with the tubes, which he did at once. Encouraged by this he asked the merchant whether he did not want some counters, &c., fitted. The merchant replied that he did, but that was not his (Frederick's) work. "Oh yes," he replied, "that is my business, and I only do the tubes when I am slack." Upon this he was instructed to draw up an estimate for the work. He went home, made his plans, and the next day gave in an estimate for 130*l.*, and accepted a contract to do the work in ten days, or forfeit 1*l.* for every day over. He went home and told his wife what he had done, and she, being a prudent woman, thought he must have gone mad. He, however, assured her of the contrary, and told her to go to four of her friends and borrow 5*l.* from each, to enable him to buy the material for the counter, whilst he hunted up a workshop and employed hands. Both were successful in their search, and on Friday morning the men were at work on timber. On the Saturday night, of course, he could not pay his men, but they worked early and late all the next week, and a good deal of the stuff was got into the warehouse. When Saturday came round again Frederick Sage knew that he must pay his men, and he accordingly went to the merchant for whom he was working and demanded 50*l.* on account. This was paid him, and he was able to settle with his men. Monday was the last day for the contract, and every nerve was strained to complete the work, but alas! the paint was obstinate and would not dry, which resulted in the loss of one day. When he came to settle the merchant informed him that he must be deducted for that day. Frederick protested, and pointed to the manner in which the work had been pushed on. But the merchant was immovable, and then told him that his contract was the highest, but was accepted as he thought him to be a man in a large way of business, and therefore able to do the job within the time. Consequently Frederick had to content himself for the loss of the 1*l.* with the knowledge that he must have acted in a business-like way to impart such an impression, and learn wisdom for the future. This was his first contract. Since that time he has had an uphill fight, but has now firmly established himself, and is carrying on a large business as a maker of air-tight windows and cases for shops. This is the short history of a humble carpenter's son of Preston.

Serious Accident at the Leeds Amphitheatre.—The scaffolding on which a party of London decorators were at work on the 8th inst. in the Amphitheatre at Leeds gave way, and the poor men fell from near the ceiling to the pit, a distance of 60 ft. A number of joiners who were flooring the pit were much hurt by the fall of the *débris* upon them; one of them, a joiner, in the employ of Mr. Hobson, the proprietor of the theatre, was very seriously injured. He and several others were removed to the Leeds Infirmary.

COMMON LODGING-HOUSES IN THE METROPOLIS.

COLONEL HENDERSON, the chief commissioner of the Metropolitan Police, in his report for 1875, just issued, says that the common lodging-houses in that part of the Metropolitan Police district comprised within the limits of the Metropolis Local Management Act of 1855, and which are under police supervision, may be said to be in a very fair sanitary condition, the number of cases of infectious and contagious diseases that have occurred in them being comparatively few. The area under inspection is twenty-two square miles, containing 1,241 registered common lodging-houses, and accommodating about 27,000 persons, exceeding in number the population of some of our cities. During the past year 69 deaths have occurred in the common lodging-houses. Of these fifty-six cases were sudden deaths. Eighteen cases of infectious diseases have arisen. Owing to the representation of the medical officer of health of the Whitechapel district that many of the rooms in his district were over-crowded,—"that is to say, every room where there is not 300 cubic feet of space allowed for each lodger,"—these rooms have been remeasured, and, where considered necessary, the number of lodgers reduced. Another medical officer of health, however, in referring to his district, makes the following statement:—"I am of opinion that, with the abundance of ventilation that is provided in nearly all the dormitories at common lodging-houses, 250 cubic feet of space is quite sufficient for the maintenance of health." To meet, as far as possible, the conflicting opinions of medical gentlemen, the following scale has been adopted for the measurement of common lodging-houses, by which it will be seen that nearly 300 cubic feet of space is given to each adult lodger:—

Height of Room.	Sup. Feet.	Cub. Contents.
6 ft. and under	50	300
6 ft. 6 in. and under	45	292
7 ft. 6 in. and under	40	300
8 ft. 6 in. and under	35	297
Above 8 ft. 6 in.	30	—

These rooms being only occupied by night, and as at a stated time in the morning (ten o'clock) all the windows and doors are opened so as to obtain thorough purification, and remain so during the day, it is considered that the present scale of measurement affords ample space for all purposes of health, and that should a greater number of cubical feet of space be enforced—that is, more than 300—the effect, owing to the reduction of lodgers, high rents, taxes, firing, &c., must be that the houses would become unremunerative and given up, the lodgers being dispersed to find homes in unlicensed houses situated in courts and alleys, already densely populated; great detriment to the public health would, in all probability, ensue, and the poorer classes themselves, would, from the want of those comforts which are now afforded them in registered houses, be made great sufferers. Accounts as to the unhealthy state of some of the common lodging-houses in the metropolis having appeared in several of the daily newspapers, certificates in refutation of these statements were obtained from the medical officers of health of the districts in which the houses complained of were situated.

During the past year, 432 keepers have been served with notices to register their houses, or the parts of houses occupied and used at the time as common lodging-houses; 275 of these houses have been surveyed and measured to accommodate (if registered), including the keepers and their families, 3,142 persons. A very large majority of these houses might, with comparatively small outlay, be rendered fit for registration. 189 houses have been permanently registered and re-opened, and are used wholly or in part as common lodging-houses. In the houses thus registered, good accommodation was provided at the time of registration for 2,747 persons. 127 houses have, from change of tenants, death of keepers, and other causes, been closed and taken off the register (many of these, however, after being improved, and in some cases considerably enlarged, have been re-opened); most of the others will, no doubt, be registered. 3,787 houses casually used as common lodging-houses are under strict supervision, and periodical visits are made by the police inspecting-officers to prevent sub-letting within the meaning of the Act. 180 common lodging-houses are now under observation, requiring more or less alterations and improvements previously to their being registered. Twenty summonses have been applied for against the keepers of common lodging-houses for various offences against the provisions of the Act. In concluding his report, Colonel Henderson says that the Common Lodging-houses Acts are working well, and taking into consideration the small staff, the large extent of ground over which they have to travel, the number of houses to be visited, and the continuous nature of these visits, very satisfactory results have been obtained. There can be no doubt that without strict supervision the common lodging-houses would quickly become active foci of moral as well as physical pestilence.

TENDERS FOR THE SEWERAGE OF LINCOLN.

AN adjourned meeting of the Lincoln Town Council was held on Monday afternoon, for the purpose of deciding upon whose tender should be accepted for the performance of the deep sewerage of the city. The tenders sent in were as follow:—

Ritson & Co.	£97,804 7 0
Greenwood & Co.	96,763 17 8
Waddingham	90,560 17 8
Clarke	82,934 15 1
Wheildon	76,767 1 6
Smith, Finlayson, & Co.	74,818 6 8
Neave & Sons	67,077 6 6
Acock	63,605 19 2

The Mayor went on to say that the contract of Mr. G. T. Acock, of Oxford (63,605*l.* 19s. 2d.), had been read and considered, and the clerk had fully explained to the Council the reason for the contractor being relieved from providing sureties for the execution of the works. The Mayor afterwards informed Mr. Acock, who was present, that his contract had been accepted and signed on behalf of the Corporation. The engineer, Mr. Mansergh, reported to the Council on each tender.

THE STICKING OF SAFETY-VALVES.

SIR,—In reading your able article "Public Safety: Three recent Calamities," I notice that you attribute the sticking of the safety-valve on board the *Thunderer* to the adhesion of the valve to its seating, owing to the extreme accuracy of fit obtainable in the lathes of the present day.

As this part of your article has been copied into some of the daily papers, I should like to point out what I conceive to be a misunderstanding on the part of the writer of it. In the first place, the fitting of a safety-valve to its seating is one of the simplest operations performed in the turning-lathe, and could have been done as accurately twenty years ago as at the present time.

Then as to the adhesion of the surfaces.

The whole area of the valve-seating would probably not exceed 6 square inches, while the area exposed to the full boiler pressure would be at least twice that amount. Supposing there was only 65 lb. pressure per square inch in the boiler when it exploded, the total excess of pressure on the exposed surface of the valve, over and above what it was loaded to blow off at, would be about 360 lb. This would be the force the adhesion would have to counteract. Divide this by the area of the seating and it gives an adhesive force of 60 lb. per square inch, a result never obtained with the most perfect plane surfaces ever made.

Again, I would ask, how can a valve be anything but a good fit in its seating when it will stand full steam pressure without leaking, and how can there ever be a film of air between the metal surfaces?

The writer of your article has evidently misunderstood the evidence of Mr. Bramwell. The sticking of the valve was caused (as I understand it) through the expansion by heat of the cylindrical fitting which forms a guide below the valve-seating, to keep it central as it rises and falls in it.

Any one who has seen the difference of fit produced in a pair of Whitworth cylindrical gauges merely by the warmth of the hand, can readily understand the effect produced by the heat of steam on the part of a valve when fitted too closely, as this appears to have been.

H. BAMFORD.

New Public Park at Jarrow.—A park or recreation-ground, value 12,000*l.*, was, on the 6th inst., given to the Mayor and Corporation of Jarrow-on-Tyne, for the use of the public, by Sir Walter and Lady James.

Books Received.

Public Health. By the late E. A. PARKES, M.D. Revised by W. AITKEN, M.D. London: Churchill. 1876.

HERE, in the space of 66 pages, we have a clear and incisive *resumé* of the requirements necessary for preserving and improving Public Health. Old readers of the *Builder* will not find anything new in it. It is a summary of deductions, so to speak, from what has been continuously set forth in our pages and is gradually obtaining general acceptance.

The views of Dr. Parkes in respect of sanitary measures were much less advanced early in his career than they afterwards became. We can remember a passage of arms with him some years ago, when he refused to attach importance to the removal of conditions the evils of which he fully recognises in the little treatise before us,—a work we can warmly recommend.

VARIORUM.

Blackwood's Magazine, treating of "Picture Dealing and its Knaveries," says:—He had come into possession of,—not one of the great State pictures that belong to history and geography, and change places only through wars and revolutions,—but still a great prize in the private collector's community, say a Madonna by Sassoferrato. At the gallery of the London dealer whence it had been obtained appears soon afterwards the Royal æsthetic agent, come expressly for that picture; but, behold, it had gone to a Manchester manufacturer! All particulars are asked and noted by the cunning æsthetic, and he is especially minute in his inquiries as to any marks on the back, and of these there are several. His coming is known as that of a great connoisseur in art; and rumours are afloat about the princely prices he has been known to pay for such works as attracted his fancy. He strays from one collection to another, carefully avoiding that where the object of his furtive design hangs. Thither he is at last driven by a special and urgent invitation of the owner, who is proud to attend on so eminent a pursuer of his own pursuit. At length they stand before the picture, and the critical moment has come. The stranger recognises an old friend. He knows it as a very remarkable production. In fact, it was created in a manner under his own very eyes; and he always maintained it to be the most perfect copy of a great picture ever made. Its owner remonstrates. It was warranted genuine, and paid for accordingly. "Now, my good fellow," says the agent, "to satisfy you how familiar I am with that piece of canvas, I shall describe to you every mark on the back of it;" and so he does. The indignant owner demands explanation from the dealer, who, after a long wrangling, offers to abjure the bargain and take back the picture.——Mr. Scott Russell, in a paper in *Good Words* on "The Service of Steam," explains the means used to attain sixty miles an hour. "To go sixty miles an hour, it is convenient to take a pair of 7-ft. wheels. A wheel 7 ft. diameter measures 22 ft. round the rim; that is, if we roll it along a road, it will roll forward 22 ft. in turning once round. In giving it two turns forward it will travel 44 ft. forward. In three turns it will travel 66 ft.; and in four turns round it will go forward 88 ft. These numbers deserve to be remembered. The value of these numbers consists in the fact that each of them represents a railway speed. If a train travel forward 22 ft. in a second of time, it will go fifteen miles an hour. If a train travel forward 44 ft. in a second of time, it goes thirty miles an hour. If it travel 66 ft. a second, that gives forty-five miles an hour. If a train travel forward 88 ft. a second, that is our sought speed of sixty miles an hour. This brings us to the important practical result, that if we wish a locomotive engine with 7-ft. wheels to drive a train forward sixty miles an hour, we must so use our power as to compel these 7-ft. wheels to go round four times in every second of time, and to take the train forward four times 22 ft. a second, and so give a speed of 88 ft. per second to the wheels and the train."

The New Airedale Independent College. This building, erected in the Gothic style, from the designs of Messrs. Lockwood & Mawson, Bradford, will be ready for opening in a few weeks. The new college is in a pleasant location at Heaton.

Miscellanea.

The Toll on Chelsea Suspension Bridge. On the 8th inst. a meeting of the residents of Battersea, Wandsworth, and locality, was held at the Artisans' Hall, Wandsworth-road, to consider the best means to be taken for freeing from toll Chelsea Suspension Bridge and other bridges. Mr. T. A. Bishop presided, and expressed regret that the Bill promoted by the Metropolitan Free Bridges Association had not passed into law. That a Bill for freeing the bridges would eventually pass he had no doubt, but in the meantime the toll which pressed most heavily on the working classes had to be paid. Chelsea Suspension Bridge was somewhat differently situated to the other metropolitan toll bridges. It was built by the Government out of money borrowed from the Public Loan Commissioners, and he believed the receipts from tolls were just sufficient to keep it in repair, so that there was a large sum due to the Public Loan Commissioners, both for principal and interest. In the other bridges the interest of the private owners would have to be compensated. He suggested that the authorities should be asked to throw open Chelsea Bridge at once, leaving the terms of payment to be decided by a Bill, having for its object a general scheme for freeing all the metropolitan bridges. Mr. H. Payne said, at present, owing to the toll at this bridge, Battersea contained miles of empty and half-built houses, while on the other side of the river, owing to the overcrowding, rents were extremely high. It was resolved that a memorial should be presented to the authorities, asking for the opening of the bridge, as suggested by the chairman.

The Charlton Drinking Fountain, Gateshead.—The ceremony of unveiling the drinking-fountain erected in the Gateshead Park, by public subscription, in honour of Mr. George Charlton, J.P., took place on the 6th inst. The fountain, which stands in a commanding position in the park, consists of a central block of masonry, approached by two steps, and crowned with a lofty crocketed shaft, surmounted with a light ironwork finial. At each corner of the upper portion of the fountain is placed a smaller shaft. The lower part of the structure is ornamented on one side by a medallion portrait of Mr. Charlton, inserted in a circular marble panel, placed upon a triangular freestone setting. On the three other sides of the fountain are similar medallions,—two charged with the arms of Gateshead, and the third bearing an inscription. Red granite columns are placed at the four corners of the structure, and smaller columns of similar materials support the fountain-basins, of which there is one upon each side of the erection. These basins, into which the water flows from floriated panels, are of grey granite. The fountain was erected by Messrs. Montgomery & Co., of Newcastle.

Solihull Rural Sanitary Authority.—The fortnightly meeting of the Solihull Rural Sanitary Authority was held on Wednesday, at the Workhouse, Solihull, the Rev. J. Howe presiding. Six tenders were received for the erection of the infectious hospital at Bickenhill. That of Mr. John Bowen, builder, Edwardes-street, Balsall Heath, which was the lowest, was accepted, the amount being 2,045*l.* The clerk (Mr. E. O. Smith) reported that he had communicated with the Local Government Board with reference to the decision of the Solihull Sanitary Authority not to combine with the adjoining Sanitary Authorities in the further joint appointment of a medical officer of health, but to appoint separately an officer for their own district. The clerk said they would remember that they had declined to combine with Birmingham for the purpose of forming a united drainage district. He had received a letter from the Drainage Committee, enclosing a copy of the proposed drainage scheme, which he read. It was decided that Mr. Pritchard, C.E., should report to the Board as to the advisability of joining with Birmingham to carry out the scheme.

New South Wales Academy of Art.—Since the purchase of the works recorded in the *Builder* of last week for the National Gallery at Sydney, the Committee of Selection have purchased the fine picture of "Chaucer reading his Poems to John of Gaunt," by F. Madox Brown (this is some 10 ft. by 14 ft.), a Pyne, a Leitch, and a De Wint. It is evident, therefore, that this enterprising colony does not intend to neglect art.

Good Advice.—The *World*, speaking of the summer life of Ilfracombe, says,—"There is no reason why the existence of Ilfracombe should come abruptly to a pause when the winter sets in. It might be such a town on the north as Torquay is on the south. The town, probably, has a Board, or can boast of some influential individuals, who surely might do something to brush up the place,—make a good carriage-road from the station, for instance; purchase the Capstan Hill, and lay it out properly with ornamental walks; build on some of the splendid vacant sites really good houses; have some good schools for residents. This is the way in which watering-places are developed when there is a happy absence of the normal sluggishness of the local mind. Ilfracombe has an excellent and very cheap market, the absence of which is a loss to the residents of Torquay; the climate is of the same temperature, but with greater changes, and being more bracing is better adapted for hopeful cases of phthisis. It might have a prosperous future before it, but it is hardly likely that such a future will be developed."

Central London Throat and Ear Hospital.—This new hospital, which is situate in the Gray's-inn-road, is now partially completed. Externally the building is simple, but substantial. The upper portion is of plain brick, with Portland dressings. The lower portion is relieved by glazed tiles. All the passages, waiting, consulting, and operating rooms, have a dado of 4 ft. 6 in. high of blue and white glazed tiles of Dutch pattern. The walls above have been finished with a permanent coloured cement, under the direction of the architect, Mr. Ernest Turner. The doors and window-fittings are for the most part of oak. The ground-floor comprises office for issue of letters to out-patients, dispensary, committee and secretary's rooms, waiting-halls, consulting-room, examining, operating, inhaling, and electric rooms. The wards are not yet finished, but immediate provision will be made for from six to ten beds. The hospital relieves annually about 4,000 patients.

New Baths and Washhouses for St. Pancras.—Some time ago the Vestry of St. Pancras decided upon building additional baths and washhouses for the accommodation of the inhabitants of the southern part of the parish, and the site of the Old Fitzroy Market, Tottenham-court-road, was secured from the London School Board at a cost of 5,030*l.* A large number of designs for the new building to be erected on the site were sent in, which have been considered by the seven commissioners of baths and washhouses appointed by the Vestry, assisted by a committee of the Vestry, the result being that the designs sent in by Mr. Gundry, of the Adelphi, Strand, were selected. Mr. Gundry will be the architect of the new building, which he estimates will cost 21,000*l.*, in addition to the 5,030*l.* for the site, which has already been paid.

Value of Land in Sunderland.—The compensation case of Carter *v.* the North-Eastern Railway Company was concluded at Sunderland on the 6th inst. The claimant's witnesses, Messrs. Tillman, Middlemiss, Porteous, and Barnes, averaged 3,580*l.* as the value of the property, against which the Company's witnesses, Messrs. Wardropper, M. Reed, and Raine, averaged 2,004*l.* The jury gave a verdict for 3,300*l.* As showing the great increase of late years in the value of Sunderland property, Mr. Carter in 1867 paid 760*l.* for what he now gets 3,300*l.* The house, No. 40, Union-street, which forms part of the block, was the birthplace of Mr. Tom Taylor, the well-known dramatic author.

Huntingdon.—Cromwell House Estate, said to be the birthplace of Oliver Cromwell, has been purchased by private contract for 3,500*l.*, apparently (says a local paper) for speculation, as part of the estate is already announced for sale in building lots.——The work of restoration at St. Mary's Church is in full progress. The north-aisle roof has been taken down. There were the remains of two roofs. The old bells have been removed, and Mr. M. E. Maile, one of the churchwardens, has presented a new peal of eight bells. The dates on the old bells were 1510, 1679, and 1737. One, dated 1833, was the gift of Sir John Arundel.

Aquarium and Winter Gardens for Rhyl. The corner-stones of a new aquarium and winter gardens at Rhyl were laid on the 9th inst. with Masonic honours, by Sir Watkin Williams Wynn, Sir Pyers Mostyn, and Mr. Osborne Morgan, M.P.

New Railway Buildings at Derby.—Within the last year the Midland Railway Company has erected in Nelson-street, Derby, two huge blocks of buildings, to accommodate two working departments, the accountant's and the goods manager's. The buildings in question possess each four flats, with thirteen spacious offices upon each flat, and also a powerful hydraulic lift. Opposite to the structure set aside for the accountants was a row of dirty dwellings of railway *employés*; but these have been "improved off," and their site is now occupied by an extensive wing in connexion with the company's well-known Midland Hotel.

A Meteoric Body.—A thunderstorm, unaccompanied by rain, occurred at Windsor about half-past five o'clock on Thursday in last week, and it is asserted that a meteoric body, apparently the size of a small cannon-ball, came over St. George's Chapel, Windsor Castle, from the north, and descending towards the roof of the residence of Captain Gee, the military knights' quarters, between the Henry VIII.'s Gateway and Garter Tower, burst. It knocked off a portion of the stone parapet, tearing the creepers in front, and withering a great portion of them. There is reason to believe it was an ordinary discharge of electricity.

The Cathedrals of England and Wales.—Messrs. Beynon & Co., of Cheltenham, have published on one large sheet views of the Anglican Cathedrals of England and Wales; grouped around St. Paul's. These are twenty-eight in number, and give a good idea of the general effect of each of these well-known buildings. We cannot go so far as to say that architects will be satisfied with it; too little knowledge of detail is shown for that; but it makes an interesting picture, and will be well in place in any clergyman's library, from Curate to Primate. Mr. W. H. Beynon, jun., did the work.

Lyme Regis.—We have to acknowledge a letter from Dr. Skinner, in which he says,—"I am far from wishing to slur over the defects of Lyme, but am most anxious to see them removed; nor do I think my letter, if honestly read, would convey such an impression; in fact, I was anxious not to state anything which could lay me open to the charge of inconsiderate writing. I inclose you a cutting from a local paper of September 5th, from which you will find that all visitors to Lyme do not find the same fault with it as 'Solo.'"—[The observations inclosed, on the "Beauties of Lyme," do not touch the matters in question.]

The Wrexham Art Treasures Exhibition.—The art treasures collected under the roof of the extemporised building at Wrexham have had a worthy exponent in the person of Mr. Forbes Robertson (of the *Art Journal*), who, on Monday afternoon, lectured on the "Old Masters of the Continental School," with special reference to the magnificent specimens that adorn the gallery; also on Friday evening on "The Modern and British School of Art." The exhibition can now be seen at its best, the collections being better classified than at first, and many articles of interest and beauty have been added.

Photographic Exhibition.—The annual exhibition arranged by the Photographic Society of Great Britain is now open in the Water Colour Gallery, Pall-mall East, and consists of 350 specimens, mostly admirable. Photography made such rapid strides at first that its movements now seem slow. The chief advance shown in the present exhibition, as in some previously, is in the direction of enlargements. There are portraits, life-size, of Mr. Millais, Mr. Ruskin, Dr. W. H. Russell, and others, which are very noticeable.

Sir R. Peel's Statue for Westminster. The late Matthew Noble's statue of Sir R. Peel was successfully cast at Messrs. Cox & Son's Bronze Foundry at Thames Ditton a few days since, and it is anticipated that it will be completed and placed in position by the end of the year. The model for this statue is almost the last work on which Mr. Noble laboured, as he spent several days at Thames Ditton putting the finishing touches to it a very short time before his death.

Cost of American Architecture.—It is stated that the amount expended for United States custom-houses and post-offices, mints, and hospital buildings, from 1789 to 1860, was $28,640,170; while since 1860 $41,269,746 have been expended.

Rugby School.—A meeting of the governing body of this school was held on the 7th inst. The only business was the opening of the tenders for the new subordinate schools to be built, from which the present school is to recruit its ranks when the scholars attain a certain standard of knowledge. The tender of Mr. Claridge, of Banbury, was accepted, and the work was ordered to be commenced at once. Mr. Clarke is the architect.

"National Association of Operative Plasterers."—Mr. M. J. Fitschen sends us an ornamental certificate of membership designed by him for this body. We took occasion, some time ago, to point out the architectural errors he had committed in a similar production, and instead of being cross he was thankful, and says he has tried to do better in consequence. He has greatly improved upon his first attempt.

Fire at a Builders' Yard.—On the morning of the 7th inst. a fire broke out on the premises of Messrs. J. & F. Coleman, builders, Nelson-street, King-street, Borough, resulting in great damage to property. A number of men are thrown out of employment through the disaster, and to compensate them for the loss of their tools a subscription has been set on foot.

Accident at the Queen's Theatre, Long-acre.—William Merrick, aged 27, one of the property men engaged at the Queen's Theatre, has been killed in a remarkable manner. The poor fellow had descended into the cellar, and for some reason or other purposed rising by a trap, which he released himself, when in his ascent his head was caught, crushing his skull, and causing instant death.

St. Helen's Town Council.—At the last monthly meeting of this council the mayor (Mr. James Radley) presiding, the council proceeded to the election of a water engineer, at a salary of 300*l.* per year. There were sixty applications for the appointment, which the water committee went carefully through, and finally selected Mr. D. M. F. Gaskin, of Liverpool, whom they recommended to the council.

Masonic Archæology.—Two Newport (R.I.) antiquaries, who have been studying the old stone mill, give it as their opinion that it was built by Freemasons at an early date. One reason assigned is that the windows are in the east, south, and west, with none in the north side of the structure. They judge, says the *American Architect*, that it was a Masonic temple built by the Norsemen.

New Vicarage at Ashted.—The foundation-stone of a new vicarage, in connexion with St. James's Church, Ashted, was laid on the 5th inst. The new building will be a substantial red brick building in the Domestic Gothic style, costing about 3,000*l.* The architect is Mr. F. B. Osborn, and the builders Messrs. Jeffery & Pritchard, all of Birmingham.

New Sewage Works at Alfreton.—A meeting of the Alfreton Sanitary Committee was held on the 7th inst., when it was resolved "That the whole responsibility of carrying on the sewage works and contract rest with Mr. Shaw, of Derby, and that he be paid remuneration at the rate of 7½ cent. on the amount of the contract."

The War in the East.—Mr. Wyld has issued a very good map of Turkey in Europe, coloured, and referred to ethnologically. It serves to show, what many people appear to be ignorant of, the great extent of the nationalities involved, the largeness of the interests at stake, and the relative positions of the great fighting powers of the Continent.

Newcastle Antiquarian Society.—On the 6th inst. the members of the Newcastle Antiquarian Society held their monthly meeting in the Old Castle, when an interesting paper was read by Mr. Holmes, C.E., on the Roman Bridge at Chollerton. Mr. John Clayton, of the Chesters, occupied the chair.

The Norwich Skating-Rink is to be opened on Tuesday, the 19th inst.

TENDERS

For reinstating stable buildings in Sermon-lane, Islington. Mr. T. H. Watson, architect:—

Batchelder	£593 0 0
Ebbage	518 0 0
Marr	518 0 0
Limm	510 0 0
Carr & Sons	510 0 0
Keyes & Head	510 0 0

For drainage of Highbridge. Mr. A. W. Estridge, engineer. Mr. W. L. Gaskell, clerk of works:—

Brock & Bruce	£4,100 0 0
Coker	3,910 0 0
Bugbird	3,450 0 0
Martell	3,212 0 0
Mitchell	3,197 0 0
Bisset	3,033 0 0
Frayne, Bros.	2,947 0 0
Crokam	2,7[illegible]6 0 0
Haynes	2,400 0 0
Lean	2,345 0 0
Hayter (accepted)	2,260 0 0

For schools for 160 children, with teachers' residence attached, for the Stanton School Board, Suffolk. Mr. John T. Woodard, architect:—

Adams & Cawley (accepted)	£1,133 0 0

Accepted for the erection of the Holy Croft Board Schools, caretaker's house, cookery instruction-room, covered playgrounds, outbuildings, and boundary-walls, Keighley. Mr. George Smith, architect. Quantities supplied:—

Crabtree, Bros., and Sugden (masons).
Demaine (joiner).
Harrison & Sons (plumbers).
Mitchell (plasterer).
Hill & Nelson (slaters).
Tillotson & Harrison (painters).

Total.....£3,704 0 0

For rebuilding Nos. 47 and 48, Leadenhall-street, for Mr. W. Conolly. Mr. R. P. Notley, architect:—

Perry & Co.	£3,510 0 0
Little	3,434 0 0
Kilby	3,420 0 0
Radkin	3,328 0 0
Morter	3,323 0 0
Browne & Robinson	3,285 0 0
Bangs & Co.	3,280 0 0
Hart	3,248 0 0
Falkner	3,185 0 0

For new boys' schools, East-street, Greenwich, for Roan's Charity. Mr. Robert Walker, architect:—

Stamp & Bowtle	£5,783 0 0
Grieve & Littlejohn	5,456 0 0
Coles	5,188 0 0
Marsland	4,954 0 0
Smith	4,908 0 0
Sawyer	4,885 0 0
Bayes, Bros., & Allen	4,771 0 0
Hart	4,732 0 0
Jerrard	4,730 0 0
Tongue	4,711 0 0
Kilby	4,672 0 0

For the construction of main reservoir and valve wells, for the Water Supply of Ripley, Derbyshire. Mr. R. Argile, jun., engineer. Quantities supplied:—

Coupe & Clower	£649 0 0
Knighton	553 16 0
Wain (accepted)	330 10 0

For a block of shops and offices to be erected on the site of St. Antholin's, Queen Victoria-street, for Messrs. Standing & Marten. Mr. J. Ebenezer Saunders, architect. Quantities by Messrs. Osborn & Russell:—

Baker & Sons	£20,000 0 0
Trollope	18,993 0 0
Gammon	18,800 0 0
Colls & Sons	18,760 0 0
Tarrant	18,647 0 0
Merritt & Ashby	18,510 0 0
Conder	18,490 0 0
Ashby, Bros.	18,332 0 0
Newman & Mann	18,169 0 0
Perry & Co.	18,[illegible]33 0 0
Bland	17,987 0 0
Jackson & Shaw	17,928 0 0
Brass (accepted)	17,478 0 0

For system of sewerage for workmen's cottages at Percy Main, for the Duke of Northumberland. Mr. J. P. Spencer, engineer:—

Contract No. 1 (*exclusive of Ironwork*).

Harvey	£1,434 5 0
Bell	1,425 10 0
Smith & Sons	1,395 0 0
Walker	1,385 0 0
Wood	1,212 0 0
Kennedy	1,128 15 0
Smith	1,197 0 0
Marshall	1,141 6 0
Craig (accepted)	1,[illegible]33 0 0

For system of sewerage for workmen's cottages at Spital Dene, near Tynemouth, for the Duke of Northumberland. Mr. J. P. Spencer, engineer:—

Contract No. 1 (*exclusive of Ironwork*).

Quin	£635 0 0
Marshall	621 10 0
Welton	560 0 0
Craig	520 0 0
Bell	493 8 0
Wood	490 0 0
Walker	454 19 0
Moulton	448 0 0
Kennedy (accepted)	421 0 0

For new filter-beds at the Salt Water Works, North Shields, for the borough of Tynemouth Urban Sanitary Authority. Mr. J. P. Spencer, engineer:—

Simpson	£2,005 9 0
Atkinson	2,001 6 0
Hannah	2,000 0 0
Hunter	1,998 5 0
Bell	1,886 3 0
Donkin	1,850 0 0
Jackson	1,820 0 0
Smith	1,382 10 0
Hall (accepted)	1,347 5 0

For pair of semi-detached villa residences, Madeira-road, Ventnor, for Mr. A. Hill. Mr. Francis Newman, architect. Quantities by Mr. J. Newman:—

Moses & Wallder	£1,850 0 0
A. & A. Newnham	1,800 0 0
Coleman (accepted)	1,751 18 8

For the erection of a new house Over Hill-road, Dulwich, for Mr. Morley. Mr. C. Wilshire, architect:—

Buck (accepted)	£590 0 0